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ABSTRACT

This proposal for a program designed to train workers to manufacture single-engine, piston-driven aircraft for Cessna Corporation was developed by Independence Community College in conjunction with Pittsburgh State University (Kansas) and the Southeast Kansas Area Vocational-Technical School. The proposal provides for on-site training in a state-of-the-art 8,400 square foot training facility; a job training director; a customized training curriculum; a total quality management training staff; selection and assessment screening of employees using college-administered tests chosen in conjunction with Cessna officials; utilization of government-funded grants totaling over $2 million; a state-of-the-art aviation training model; and ongoing training and retraining. Specific training topics included in this proposal are: (1) assumptions and exceptions with respect to materials, processes, and manufacturing methods; (2) training process flow; (3) selection and assessment of employees; (4) pre-employment training and education; (5) infrastructure for planning and coordination; (6) human and physical asset capabilities and resources; (7) utilization of funding sources; (8) sharing of responsibilities between providers; (9) measurement of training effectiveness; (10) expected costs; and (11) risk assessment. The final sections include a drawing of the training facility, job descriptions, a chart illustrating the Cessna training assessment model, an educational needs assessment survey instrument, occupational profiles in the aircraft mechanics series, and other financial information. (KP)

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ED 380 149

PRELIMINARY TRAINING PROPOSAL
FOR
CESSNA AIRCRAFT OF INDEPENDENCE

INDEPENDENCE COMMUNITY COLLEGE
Independence. Kansas

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FOREWARD

Southeast Kansas, through selection by Cessna Aircraft as the site for a new manufacturing plant, has been given a unique opportunity to make a momentous social and economic impact on its residents. This impact will significantly change how education, the foundation of all successful social and economic growth, is delivered in this corner of the state.

As Peter Drucker writes in *Psychology Today*, "More than ever, education will fuel our economy and shape our society...but it cannot be education as usual...Education must recognize that learning is now a lifelong process of keeping abreast of change."

Change will come very rapidly now, and community college education will play a major role in both facilitating and keeping pace with that change process.

Independence, proposed site for the Single Engine Piston-Driven Aircraft plant, and nearby communities, the region and state all will now benefit from new plans and procedures in local education and training --- programs geared to meet Cessna's needs and those of change. Everyone gains from the work of a number of key individuals who gave their time, intellect, energy and total effort to make this recommended training program possible. It is a preliminary vision of key concepts, recommendations and suggestions essential for delivery of state-of-the-art training for Cessna Aircraft of Independence.

"The future cannot be feared...it is the only future we have, so we had better figure out how to deal with it," said Gerald Baliles, former governor of the Commonwealth of Virginia.

Independence Community College is excited to work with the Higher Education Consortium of Southeast Kansas (HEAT), area business and industry, and most importantly, surrounding communities in ensuring that a quality-trained, leading-edge work-force is ready to manufacture the best aircraft in the world.

Dr. Herbert J. Swender
Dean of Instructional Services

January 10, 1995

PREFACE AND ACKNOWLEDGEMENTS

Included herein is the preliminary training proposal designed to manufacture a single engine piston-driven aircraft for Cessna Corporation. This training proposal was a combination of hard work and dedication by several individuals from Independence Community College.

Beginning Monday, October 10,1994, phase two of a two-phase process was implemented once the announcement of the five final sites was disclosed. At that time, under the leadership of ICC President Don Schoening, a team was challenged to produce a training proposal that would provide for a world-class workforce for Cessna. During, the next two and a half weeks there was an intense effort made to provide a proposal that would not only be doable but state-of-the-art.

Some of the key individuals who helped make this preliminary training proposal possible were: F. George McDuffey, manufacturing technology instructor, Allen County Community College; Debra Haverner, associate dean of extended instructional services; Dee Dee Schabel, coordinator of development education; Tim Daniels, director of activity I, Title III; Carol Small, library technican; Janice Weir, director of library services; Karla Kemp, secretary to Title III; Darrin McFarland, director of activity II, Title III; Ron McIntosh, journalism instructor, Colleen Long, coordinator for extended instructional services; with input and suggestions from Dr. Schoening and a special commitment and effort by Nancy Thomas, secretary to the dean of instructional services---all from Independence Community College. Without the efforts of these individuals, the vision and foresight of this training model would not be possible. Depicted on Page 36 is a revised matrix that is slightly different from the originial proposal submitted October 26, 1994. However, this matrix is perhaps the very foundation and most key ingredient for the success of this training program.

With the total commitment of Southeast Kansas toward improving the quality of life for our citizens, Independence Community College has provided leadership, opportunity and foresight for implementing a world-class training proposal for Cessna Aircraft Corporation.

Dr. Herbert J. Swender
Dean of Instructional Services

January 10, 1995

Points of Emphasis
INDEPENDENCE TRAINING PROPOSAL

The Independence training program specifically designed by Independence Community College in conjunction with Pittsburg State University and the Southeast Kansas Area Vocational-Technical School for the Cessna Aircraft Company to be located in Independence, Kansas, provides for:

- On-site training in a state-of-the-art 8,400 square foot training facility including classroom and shop/lab space which will be designed and built in conjunction with Cessna officials.

- A Director for Job Training to be employed by the Cessna Training Advisory Team which will include representatives from Cessna, Pittsburg State University, Independence Community College & SEK Area Vocational-Technical School.

- The Director for Job Training will oversee the development of a customized training curriculum selected from service providers most capable of delivering the necessary training.

- The employment of a total quality management training staff under the direction of an on-site Director of Job Training will incorporate self directed work teams in all employee training.

- Coordinated on-site training provided by the Higher Education Alliance Team composed of Pittsburg State University, Allen County Community College, Coffeyville Community College, Fort Scott Community College, Independence Community College, Labette Community College, Neosho County Community College, and SEK Area Vocational-Technical School.

- Selection and assessment screening of employees using a series of college administered assessment and skill tests chosen in conjunction with Cessna officials.

- The utilization of governmentally-funded grants including: Kansas Industrial Training (KIT), Kansas Industrial Retraining (KIR), Mid-America Manufacturing Technology Center funds, Kansas Technology Center funds, Kansas Technology Enterprise Corporation funds and the State of Kansas Investment in Lifelong Learning (SKILL) funds totaling over $2,000,000.

- A state-of-the-art aviation training model will be developed for approval by Cessna officials to encourage pilot training, sales and marketing of Cessna single engine aircraft.

- The Independence proposal provides for ongoing training and retraining of current employees and prospective employees beyond the expiration of state or federally funded training grants at *no cost* to Cessna.

- All training will be based on the Cessna training assessment model.

VII. TRAINING

A. Executive Summary

This training proposal suggests a possible methodology and training process that would address pre-employment and early employment training for actual or potential employees of the Cessna Aircraft Company to be located in Independence, Kansas. Included within are cognitive and meta-cognitive skills that are defined by the Dictionary of Occupational Titles which have been documented and field tested indicating critical employee skill information, and time-frames to be expected that would be invaluable for determining and predicting the training time necessary for successful employee skill development. In addition, the process flow with regards to training is shown in the appendices that involves several potential funding sources and utilization of Independence Job Services and Independence Community College.

The potential and very success for a thriving small engine aircraft production facility will lay directly in the design and organization of a comprehensive and coordinated training plan. Included in this comprehensive training plan must be a quality, well equipped facility that can deliver general as well as specific training in a timely and efficient manner. The illustration in Appendix Q shows a pictorial drawing of what could provide state-of-the-art facilities with a highly competent training staff to get the student/employee up-to-speed in an expeditious way. Also included are specific training topics that should be considered while organizing a company of this size. Topics included are:

- Assumptions and Expectations
- Process Flow
- Selection and Assessment
- Pre-employment Training and Education
- Infrastructure for Planning and Coordination
- Human and Physical Asset Capabilities/Resources

- Utilization of Funding Sources
- Sharing of Responsibilities between Providers
- Measurement of Training Effectiveness
- Expected Costs
- Risk Assessment

"Quality is everyone's responsibility." These profound thoughts by Edward Demming reflect the values and ideals that Independence Community College represents. The faculty, administration and staff at ICC are committed to high-quality standards in their educational pursuits. These standards are evidenced though our business and industry training programs and our general education curriculum. Several commentators in Total Quality Management have generalized that management must take the leadership role in providing an environment that is conducive to Total Quality Management. We, at Independence Community College, are committed to facilitate a high-quality learning environment supported by our mission. Leaders in the fields of excellence have noted that the most important issue for management is to understand that the key to success is customer satisfaction.

Independence Community College is attuned and able to deliver high-quality customized training and ongoing staff development in a timely and efficient manner. There are several options available to our "customers." Corporations like Cessna would directly benefit from our educational movement toward Total Quality Management. Our first step as an educational organization promoting TQM would be to assess the skills that the employee and Cessna presently have and require. As noted in the proposal, the local school district and Independence Community College is committed to outcomes-based mastery learning which ensures companies and organizations that their employees, once they have completed a program validated with competency profiles, are well positioned for employment success.

Included in Appendix R are examples of necessary job descriptions that should be considered and recommendations for developing a comprehensive training flow chart along with faculty and personnel recommendations.

B. Assumptions and Exceptions

(1) The major manufacturing operation at this location will involve primarily basic aircraft sheet metal work which includes minimal compound curves, and final assembly which includes painting, trim, installation of avionics, etc. and final flight approval.

(2) The materials and methods used are traditional such as thin, constant gauge sheet aluminum and riveting.

(3) Exotic materials such as titanium, lithium-magnesium alloys and carbon or Kevlar fiber composites, and high-tech processes such as diffusion bonding, electron beam welding or superplastic forming will **not** be considered in the initial production process but could be a viable component of future training.

(4) Management, supervision and first level cadré employees will be provided by Cessna.

(5) Employees for positions requiring licensure or professional certification such as Air Frame and Engine mechanics [FAA] or Quality Technicians, Engineers or Auditors [ASQC] will be obtained and furnished by Cessna.

(6) The product(s) to be assembled at this location are "mature" and will have a minimum number of design or process changes.

(7) A minimum number of different products will be assembled at this facility.

(8) The implementation of industrial robics and automation will not be utilized in the initial start up of the Independence single engine facility. However, maximum use of computer technology will be used during the manufacturing process. Computers will be utilized to the maximum in data collection, i.e., efficiency reports, time and effort, payroll, inventory, time/attendance along with general business communication both within the Independence plant and with corporate headquarters in Wichita. In many cases this will involve the extensive use of barcode readers or other scanners.

C. *Training Process Flow*

The training process will be overseen by a comprehensive Training Advisory Council Team comprised of 12 members, six from Cessna, three from education and three citizens-at-large. This Council which will be selected and coordinated by the Director of Training will be designed to meet quarterly to review and propose the selection training process for Cessna. (See Appendix S for the Cessna and Independence Community College Training Assessment Model.)

1. The initial screening with primary assessment

Primary screening will be conducted by the Independence Job Service as prescribed from this Training Advisory Council (note letter of support--Appendix S). Once the applicants have been identified, names will be submitted for employment consideration to the secondary employment assessment stage which will be conducted by Independence Community College. In this process, assessment tests will be given, scored, processed, and interpreted by Independence Community College.

2. Determination of Funding for Employment Training

Independence Community College is proposing a matrix of a three-tiered approach to help better identify the actual training costs that may be provided by:

- Federal and State Funding, e.g., JTPA, Single Parent/Displaced Homemakers, EDWA, Veterans Benefits, etc.

- Through Cessna and/or Independence Community College, e.g., sponsored corporate training, educational scholarships via the college, PELL grants, GPA from high school, SKILL, KIT and KIR grants.

- The employee pays for the technical training and/or development training on their own. This would be completely a personal investment by the employee.

Following the determination of funding for the three proposed categories an Individualized Training Plan (ITP) will be developed and coordinated by the Coordinator of Training Programs. Once the Individualized Training Plan is identified, a subsequent three-pronged training approach would be selected--

- Those employees ready for production line work that have the necessary academic preparation and abilities to do the technical production line work
- Those employees that are defined as needing basic skills/development education prior to the classroom technical training and then production line
- Those employees who is goes directly to classroom and technical training and then to the production line

By outlining comprehensive Individualized Training Plans, this will map the needed training commitment of the company and the employee. Moreover, this would serve as an informal contract with the potential employee and Cessna to determine the approximate training time needed to be production line ready.

D. Selection and Assessment

1. Selection

The selection process will begin with an application procedure consistent with Cessna's existing selection process which will include drug screening and personal information that are mandated by FAA regulations. This may exclude some JTPA eligible clients and other welfare-to-work applicants due to stringent FAA requirements. See Appendix S.

2. Assessment

Independence Community College recognizes that employees who possess the key skills necessary for success in their jobs are more productive, motivated, and dedicated. Therefore, in working with Cessna, ICC will take all prospective Cessna employees who have completed the initial screening phase with Independence Job Service and provide effective measurement of job-related competencies. During this pre-employment phase, we will access a variety of testing mechanisms that will provide greater predictability for employee success. Examples of employee success indicators are:

Compass - Utilize for screening mid-management and office personnel

Compass is an untimed, computerized assessment test of reading, writing, and math skills. Some of its benefits are:

(1) High predictability of academic ability and success
(2) Time efficient
(3) Immediate scoring

Apticom - Utilize for any employment position. It is especially geared toward assembly worker aptitude measurements. Apticom is an aptitude test battery measuring ten aptitudes set by the U. S. Department of Labor. They are as follows:

(1) General learning ability
(2) Verbal aptitude
(3) Numerical aptitude
(4) Spatial aptitude
(5) Form perception
(6) Clerical perception
(7) Motor coordination
(8) Finger dexterity
(9) Manual dexterity
(10) Eye-hand-foot coordination

Apticom will be an extremely valuable tool for Cessna because it is (1) based on industry and vocational linked competencies, (2) measures aptitudes constructs related to occupational success, (3) is non-discriminatory, and (4) is cost and time effective.

Minimal levels are set in standardized testing as predictors of general ability. Specific deficiencies and strengths cannot be identified unless a test is more diagnostic in nature. After completing the screening at this secondary assessment level, all potential employees will undergo additional testing of this diagnostic type. These tests will be used to identify position-unique skills which are critical for job success.

Tests available at Independence Community College to measure ability levels include:

(1) Comprehensive Adult Student Assessment System (CASAS)
(2) Test of Adult Basic Education (TABE)
(3) McMillian Reading
(4) Informal Reading Assessment
(5) Lockhart - Math and English
(6) Multitude of additional diagnostic skill specific instruments

The Cessna plant at Independence will be implementing a productive team approach to competitive business, thus an assessment of interpersonal skills will be completed. One such test that has been used with great success, as evidenced by many companies, including one Maryland firm, is the Predictive Index (PI). PI was developed by the Management Development Grou, Inc. In Cleveland, Ohio. The test takes merely ten minutes to administer and accurately measure 86 worker attributes. These include tendency or willingness to work in a group and other preferences.

After the field of candidates has been narrowed and diagnostic testing has isolated concepts, the potential employee needs to become employment ready. Independence Community College's trained professionals will develop an Individualized Training Plan (ITP) specifically designed for Cessna by ICC's trained instructional team. The prescriptive program, based on the combined assessments, will be specific to worksite and position needs.

E. Pre-employment Training and Education

As discussed in the Training Process Flow, catagory C, and Selection and Assessment, catagory D in the proposal, pre-employment training and education opportunity will begin with the public middle and high school age students via Tech Prep. However, the effects of Tech Prep articulations initiatives for air craft manufacturing will not be totally felt from this vocational program area until fall of 1997, due to the age of the students. The technical skill training and developmental education should be in full implementation within three months after startup. Nevertheless, the most important component will be the proper assessment on the in-take of pre-employment screening, and developing a quality Individual Training Plan (ITP) that dovetails the individual skills with Cessna to maximize both parties to the fullest creating a work team that is efficient and effective.

F. Infrastructure for Planning and Coordination

Independence is in a unique position to provide a vital infrastructure of planning and training for any business or industry seeking a quality trained workforce in southeast Kansas. This infrastructure is comprised of a coordinated K-12 system, see Appendix S for Greenbush activities for this academic year, a Higher Educational Alliance Team (HEAT), Appendix T and agreements with area vocational schools as well as signed articulation agreements with Kansas's public four-year colleges and universities. This coalition of educational entities presently

serves as a model for the state of Kansas. Moreover, recent legislation as well as heightened visibility of the southeast Kansas Education system has attracted numerous inquires from other states as well as different agencies within the state of Kansas including the Department of Commerce and the Kansas Department of Health and Human Services. Additional examples of the infrastructure that exists in the educational system of southeast Kansas is evidenced by the HEAT commitment which exists allowing all six community colleges and Pittsburgh State University to share in the delivery in customized or specialized technical training that Cessna may require. An example of this would exist especially in electronics--Allen County Community College and Neosho County Community College both have communicated a strong desire to be a part in the delivery of this type of electronics training. In addition, area vocational schools located in Coffeyville, Altamont and Columbus would also be accessible for specific technical training if needed.

Another integral part of the training infrastructure would be the coordination of travel to other communities providing specialized training. Outlined in Appendix U, there is a price quote from Goodwill Tours, Erie, KS, that could be considered if training requires off site travel to surrounding southeast Kansas communities. In addition to the 43-passenger motor coach quote, Independence Community College could also be considered in the planning of off-site training using our existing college motor pool that has seven 12 passenger vans.

To be considered for training program is the facility itself. Depicted on the following page is a CAD generated pictorial of what might be considered as the training site. This 8,400 square foot proposed training facility would be equipped with four lecture/discussion classrooms with one room being dedicated to interactive distance learning. This specially equipped room would provide access for any state-of-the-art training techniques available as well being available to educate any production team, management or consumer group that could benefit. In addition to these four classrooms included in the facility would be two hands-on learning labs that would be uniquely equipped with overhead material handling and compressed air for pneumatic tool use. Located in the second of the two labs would be a complete self contained finishing booth that could be utilized as training proper spraying techniques, mixing of the epoxies all of which would be enclosed in an explosion self-proof, self-contained spray booth.

As an option, for consideration, adjacent to the back side or perhaps the lab side of the training facility, could be the child care center that would be large enough to handle forty-five children ages 6 months to high school age and 15 infants

to six-months of age. This facility would have to comply with the staffing regulations set forth by the state of Kansas with a minimum staff of four daycare operators. Of these daycare operators, two should be licensed and two could be paraprofessionals. Approximate cost--$15,000.00 per year for the paraprofessionals and $18,000.00-$20,000.00 per year for the licensed individual. Included in the daycare would be a self-contained kitchen that could utilize the already existing food service that would be incorporated with the training facility or designed to be totally self-contained whereby the daycare could cater all snacks and meals to conduct the day's business.

G. Human And Physical Asset Capabilities/Resources

The most crucial and integral part of successful business or cooperation is the human resource. With this in mind, attached is an example of what would need to be determined for every position associated with Cessna Aircraft in Independence. Utilizing the Dictionary of Occupational Titles, which have been derived from extensive studies conducted by the federal government identify several job classifications that one can expect when entering into a selected manufacturing field such as aircraft production. As an example, utilizing this DOT information we could better predict through job classifications the time and expected outcomes necessary for job success. As an example everything from custodial to management is outlined and identified in the DOT manual. Moreover, the job title "Assembler, Installer, General" is identified as number 806.361-014 and considered to take 12 months of training with a level 4 in the reasoning development; a level 3 in the mathematical development; and, level 3 in the language development. In addition to these identified cognitive skills, this job classification has physical demand as "M" for medium physical demand. Utilizing this basis of information, a more accurate prediction of time and effort could be determined. Continuing, this position would take approximately 12 months for this individual to be fully productive and operational at the 100% efficiency rating.

Prior to the company start-up these minimum cognitive requirements, moreover, the mathematics, reasoning, and language requirements would be important in the design of an employee's Individualized Training Plan (ITP)--especially if striving toward a 100% efficiency level. However, these requirements are not an exact scientific prescription for employee success, they are however, probably as accurate as any information we have available. Refer to the subsequent

pages for the exact categorical information and the specific vocational preparation as defined by the U.S. Department of Labor Dictionary of Occupational Titles.

A review of the applicable sections of the Dictionary of Occupational Titles published by the U.S. department of Labor indicates the following job titles will most likely be required at your facility. This publication is most important in that it not only indicates the job title but also the job contents, three areas of cognitive requirements, typical training time required for the position and the level of physical activity involved. **Under the assumptions stated at the start of this document, such as a less complex aircraft, traditional materials and methods, and product stability, *the lower value* of the estimated Specific Vocational Preparation [training] time is used*, and the cognitive requirements .**

S = Specific Vocational Preparation time **in months** required for a typical worker to learn the techniques, acquire the information, and develop the facility needed for average performance in a specific job-worker situation.

R = Reasoning development;

M = Mathematical development;

L = Language development;

of **General Educational Development [GED]** required for satisfactory job performance.

P = Physical demands or overall strength rating of job coded as

L = light, **M** = medium, **H** = heavy, **V** = very heavy.

Job Title	DOT code	S*	R	M	L	P
aircraft and engine electrician, field and hanger	825.261-014	24	4	4	4	L
AF&E mechanic, Field and Hanger	621.281-014	24	4	4	4	M
aircraft-delivery checker	222.387-010	6	3	3	3	L

AF&E mechanic, Field and Hanger	621.281-014	24	4	4	4	M
aircraft-delivery checker	222.387-010	6	3	3	3	L
aircraft mechanic	621.281-014	24	4	4	4	M
aircraft mechanic, electrical	825.281-018	24	4	3	3	L
AC Mechanic electrical and radio	825.381-010	6	3	3	3	L
AC mechanic environmental systems	806.381-014	24	4	3	3	M
AC mechanic, plumbing and hydraulics	806.381-066	24	3	3	3	M
AC mechanic, rigger	806.381-018	3	4	4	3	M
AC mechanic, rigger and controls	806.381-018	12	4	4	3	M
AC mechanic, structures	806.381-026	12	4	3	3	M
AC shipping checker	222.387-010	6	3	3	3	L
aircraft skin burnisher	807-684-018	1	3	1	2	L
Airframe and Powerplant Mechanic	621.281-014	3	4	4	4	M
Airframe and Powerplant mechanic, helper	621.684-010	3	3	2	2	M
Airplane coverer	849.381-010	24	3	2	2	M
Assembler, aircraft structure and surfaces	806.381-026	12	4	3	3	M
assembler, bonding	806.384-030	6	3	2	3	M
assembler, electromechanical	828.381-018	24	4	3	3	M
assembler-installer, cable control systems	806.381-018	24	4	3	3	M
assembler, installer - general	806.361-014	12	4	3	3	M
assembler, metal bonding	806.384-030	6	3	2	3	M
assembler, radio and electrical	729.384-026	1	3	2	3	L
avionics and radar technician	823.261-026	12	4	4	4	L
blue print control clerk	206.367-010	12	4	3	4	L
cabin furnishing installer	806.381-078	12	4	3	3	M
cable assembler	806.381-042	12	3	3	3	M
cable cutter and swadger	806.381-042	12	3	3	3	M
check-out mechanic, hydraulic and rigging	806.251-042	48	4	3	3	M
data acquisition lab tech	002.167-010	48	6	5	6	S
dope and fabric worker	849.381-010	24	3	2	2	M

drawing release clerk	206.367-010	12	4	3	4	L
electrical assembler	729.384-026	3	3	2	2	L
mechanic, electrical check-out	806.261-050	48	4	3	3	M
electrical equipment tester	729.381-010	12	3	3	3	L
electrical inspector	825.381-026	24	4	3	3	L
electrician, aircraft	825.261-018	24	4	3	3	M
encapsulator	556.684-014	3	3	2	2	M
Flight Line Mechanic	621.281-014	24	4	4	4	M
Flight Line Service Attendant	621.684-010	3	3	2	2	M
Form block Maker	693.281-030	24	4	4	4	M
Fuel Tank Sealer and Tester	806.384-038	3	3	2	2	L
General helper, aircraft	809.687-014		2	1	1	M
Hammer operator	617.382-014	6	3	2	2	M
Helper, manufacturing	809.687-014		2	1	1	M
Installer, hydraulic and plumbing	806.381-066	24	3	3	3	M
Inspector, Assemblies and Installations	806.261-030	24	4	4	4	M
Inspector, bench assembly	806.281-026	24	4	4	3	L
Inspector, Engines and component assembly	806.261-030	24	4	4	4	M
Inspector, Fabrication	806.361-022	12	4	4	3	M
Inspector, final assembly	806.261-030	24	4	4	4	M
Inspector, Material disposition	806.261-034	24	4	4	4	M
Inspector, Outside production	806.261-042	24	4	4	4	L
Inspector, Processing	806.381-074	6	3	3	3	L
Inspector, receiving	222.384-010	6	3	2	3	M
Inspector, sheet metal parts	806.361-022	12	4	4	3	M
Inspector, Structures	806.261-030	24	4	4	4	M
Installer, Interior Assemblies	806.381-078	12	4	3	3	M
Instrument Inspector	722.381-014	24	4	4	3	M
Integral Tank Sealer	806.384-038	3	3	2	3	L
jig and fixture builder	693.281-030	24	4	4	4	M

Kitter	754.684-042	6	3	2	2	M
line assembler, aircraft	806.361-014	12	4	3	3	M
MRB representative, QC	806.261-034	24	4	4	4	M
Material Scheduler	012.167-082	24	5	5	5	S
Mechanic, Rigging and controls	806.261-050	48	4	3	3	M
Mechanic, electrical operational test	806.261-050	48	4	3	3	M
Mechanic, general operational test	806.261-050	48	4	3	3	M
Painter, aircraft	845.381-014	12	3	2	3	M
Painter, aircraft apprentice or trainee	845.381-010	12	3	2	3	M
Painter, insignia	741.684-026	3	3	2	2	M
paint stocker	222.387-058	3	3	3	2	H
planishing hammer operator	617.382-014	6	3	2	3	M
primer sprayer	741.684-026	3	3	2	2	M
process equipment operator	704.381-014	12	3	2	3	M
production control scheduler	012.167-082	24	5	5	5	S
quality assurance calibrator	019.281-010	24	5	5	4	L
release and technical records clerk	206.367-010	12	4	3	4	L
riveting machine operator	806.380-010	12	4	3	3	M
riveting machine operator, programmed control	806.380-010	12	4	3	3	M
router operator, hand	806.684-150	3	3	1	2	M
sealer mixer	550.685-062	1	3	2	2	H
sealer, aircraft	806.384-038	3	3	2	3	L
sheet metal assembler	806.383-034	6	3	2	3	M
skin-lap bonder	806.684-130	1	3	2	3	M
spares rework mechanic	621.281-014	24	4	4	4	M
standards laboratory technician	019.281-010	24	5	5	4	L
Supervisor, inspection	806.131-038	24	4	4	4	L
Supervisor, production	806.131-042	48	4	4	4	M
systems check-out mechanic	806.261-050	48	4	3	3	M
Technical specialist, aircraft systems	621.221-010	24	5	4	4	L

trimmer	693.261-010	12	4	4	4	M
tube bender-assembler	806.381-034	12	3	3	3	M
undercoat sprayer	741.687-018		2	1	1	M
upholsterer	780-384.014	12	3	2	3	M
wood-tool maker	693.281-030	24	4	4	4	M
wrapper and preserver	920.587-018		2	1	1	M

The following three catagories represent necessary General Educaiton Development (GED) skills that have been deemed essential by the U.S. Department of Labor for proper emploee development. Refer to the appropriate job specification number, e.g., 920.587-018 that corresponds with Reasoning Development; Mathematical Development; and Language Development.

Scale of General Education Development (GED)
(Dictionary of Occupational Titles, 4th Edition)

	Reasoning Development	Mathematical Development	Language Development
6	Apply principles of logical or scientific thinking to a wide range of intellectual and practical problems. Deal with nonverbal symbolism (formulas, scientific equations, graphs, musical notes, etc.) in its most difficult phases. Deal with a variety of abstract and concrete variables. Apprehend the most abstruse classes of concepts.	**Advanced Calculus:** Work with limits, continuity, real number systems, mean value theorems, and implicit functions theorems. **Modern Algebra:** Apply fundamental concepts of theories of groups, rings, and fields. Work with differential equations, linear algebra, infinite series, advanced operations methods, and functions of real and complex variables. **Statistics:** Work with mathematical statistics, mathematical probability and applications, experimental design, statistical inference, and econometrics.	**Reading:** Read literature, book and play reviews, scientific and technical journals, abstracts, financial reports, and legal documents. **Writing:** Write novel, plays, editorials, journals, speeches, manuals, critiques, poetry, and songs. **Speaking:** Conversant in the theory, principles and methods of effective and persuasive speaking, voice and diction, phonetics, and discussion and debate.

	Apply principles of logical or scientific thinking to define problems, collect data, establish facts, and draw valid conclusions. Interpret an extensive variety of technical instructions in mathematical or diagrammatic form. Deal with several abstract and concrete variables.	**Algebra:** Work with exponents and logarithms, linear equations, quadratic equations, mathematical induction and binomial theorem, and permutations. **Calculus:** Apply concepts of analytic geometry, differentiations and integration of algebraic functions with applications. **Statistics:** Apply mathematical operations to frequency distributions, reliability and validity of tests, normal curve, analysis of variance, correlation techniques, chi-square application and sampling theory, and factor analysis.	Same as Level 6
4	Apply principles of rational systems to solve practical problems and deal with a variety of concrete variables in situations where only limited standardization exists. Interpret a variety of instructions furnished in written, oral diagrammatic, or schedule form.	**Algebra:** Deal with system of real numbers; linear, quadratic, rational, exponential, logarithmic, angle and circular functions, and inverse functions, related algebraic solution of equations and inequalities; limits and continuity, and probability and statistical inference. **Geometry:** Deductive axiomatic geometry, plane and solid; and rectangular coordinates. **Shop Math:** Practical application of fractions, percentages, ratio and proportion, mensuration, logarithms, slide rule, practical algebra, geometric construction, and essentials of trigonometry.	**Reading:** Read novels, poems, newspapers, periodicals, journals, manuals, dictionaries, thesauruses, and encyclopedias. **Writing:** Prepare business letters, expositions, summaries, and reports, using prescribed format and conforming to all rules of punctuation, grammar, diction, and style. **Speaking:** Participate in panel discussions, dramatizations, and debates. Speak extemporaneously on a variety of subjects.

3	Apply commonsense understanding to carry out instructions furnished in written, oral, or diagrammatic form. Deal with problems involving several concrete variables in or from standardized situations.	Compute discount, interest, profit and loss; commissions, markup, and selling price; ratio and proportion, and percentage. Calculate surfaces, volumes, weight, and measures. **Algebra:** Calculate variables and formulas; monomials and polynomials; ratio and proportion variables; and square roots and radicals. **Geometry:** Calculate plane and solid figures; circumference, area, and volume. Understand kinds of angles, and properties of pairs of angles.	**Reading:** Read a variety of novels, magazines, atlases, and encyclopedias. Read safety rules, instructions in the use and maintenance of shop tools and equipment, and methods and procedures in mechanical drawing and layout work. **Writing:** Write reports and essays with proper format punctuation, spelling, and grammar, using all parts of speech. **Speaking:** Speak before an audience with pose, voice control, and confidence, using correct English and well-modulated voice.
2	Apply commonsense understanding to carry out detailed but uninvolved written or oral instructions. Deal with problems involving a few concrete variables in or from standardized situations.	Add, subtract, multiply, and divide all units of measure. Perform the four operations with like common and decimal fractions. Compute ratio, rate, and percent. Draw and interpret bar graphics. Perform arithmetic operations involving all American monetary units.	**Reading:** Passive vocabulary of 5,000-6,000 words. Read at rate of 190-215 words per minute. Read adventure stories and comic books, looking up unfamiliar words in dictionary for meaning, spelling, and pronunciation. Read instructions for assembling model cars and airplanes. **Writing:** Write compound and complex sentences, using cursive style, proper end punctuation, and employing adjectives and adverbs. **Speaking:** Speak clearly and distinctly with appropriate pauses and emphasis, correct pronunciation, variations in word order, using present, perfect, and future tenses.

1	Apply commonsense understanding to carry out simple one- and two-step instructions. Deal with standardized situations with occasional or no variables in or from these situations encountered on the job.	Add and subtract two digit numbers. Multiply and divide 10's and 100's by 2, 3, 4, 5. Perform the four basic arithmetic operations with coins as part of a dollar. Perform operations with units such as cup, pint, and quart; inch, foot, and yard; and ounce and pound.	**Reading:** Recognize meaning of 2,500 (two- and three-syllable) words. Read at a rate of 95-120 words per minute. Compare similarities and differences between words and between series of numbers. **Writing:** Print simple sentences, containing subject, verb, and object, and series of numbers, names, and addresses. **Speaking:** Speak simple sentences, using normal word order, and present and past tenses.

SPECIFIC VOCATIONAL PREPARATION (SVP)
(Dictionary of Occupational Titles, 4th Edition)

Specific Vocational Preparation is defined as the amount of time required by a typical worker to learn the techniques, acquire the information, and develop the facility needed for average performance in a specific job-worker situation.

PHYSICAL DEMANDS – STRENGTH RATING (Strength)
(Dictionary of Occupational Titles, 4th Edition)

The Physical Demands Strength Rating reflects the estimated overall strength requirement of the job, expressed in terms of the letter corresponding to the particular strength rating. It represents the strength requirements which are considered to be important for average, successful work performance.

The strength rating is expressed by one of five terms: Sedentary, Light Medium, Heavy, and Very Heavy. In order to determine the overall rating, an evaluation is made of the workers involvement in the following activities:

a. <u>Standing, Walking, Sitting</u>

Standing -Remaining on one's feet in an upright position at a work station without moving about.

Walking -Moving about on foot.

Sitting - Remaining in a seated position.

b. Lifting, Carrying, Pushing, Pulling

Lifting - Raising or lowering an object from one level to another (includes upward pulling).

Carrying-Transporting an object, usually holding it in the hands or arms, or on the shoulder.

Pushing - Exerting force upon an object so that the object moves away from the force (includes slapping, striking, kicking, and treadle actions).

Pulling - Exerting force upon an object so that the object moves toward the force (includes jerking).

Lifting, pushing, and pulling are evaluated in terms of both intensity and duration. Consideration is given to the weight handled, position of the worker's body, and the aid given by helpers or mechanical equipment. Carrying most often is evaluated in terms of duration, weight carried, and distance carried.

Estimating the Strength factor rating for an occupation requires the exercise of care on the part of occupational analysts in evaluating the force and physical effort a worker must exert. For instance, if the worker is in a crouching position, it may be much more difficult to push an object than if pushed at waist height. Also, if the worker is required to lift and carry continuously or push and pull objects over long distances, the worker may exert as much physical effort as is required to similarly move objects twice as heavy, but less frequently and/or over shorter distances.

c. Controls

Controls entail the use of one or both arms or hands (hand/arm) and/or one of both feet or legs (foot/leg) to move controls on machinery or equipment. Controls include but are not limited to buttons, knobs, pedals, levers, and cranks.

Following are descriptions of the five terms in which the Strength Factor is expressed:

S - Sedentary Work -- Exerting up to 10 pounds of force occasionally (Occasionally: activity or condition exists up to 1/3 of the time) and/or a negligible amount of force frequently (Frequently: activity or condition exists from 1/3 to 2/3 of the time) to lift, carry, push, pull, or otherwise move objects, including the human body. Sedentary work involves sitting most of the time, but may involve walking or standing for brief periods of time. Jobs are sedentary if walking and standing are required only occasionally and all other sedentary criteria are met.

L - Light Work -- Exerting up to 20 pounds of force occasionally, and/or up to 10 pounds of force frequently, and/or a negligible amount of force constantly (Constantly: activity or condition exists 2/3 or more of the time) to move objects. Physical demand requirements are in excess of those for Sedentary Work. Even though the weight lifted may be only a negligible amount, a job should be rated Light Work: (1) when it requires walking or standing to a significant degree; or (2) when it requires sitting most of the time but entails pushing and/or pulling of arm or leg controls; and/or (3) when the job requires working at a production rate pace entailing the constant pushing and/or pulling of materials even though the weight of those materials is negligible. NOTE: The constant stress and strain of maintaining a production rate pace, especially in an industrial setting, can be and is physically demanding of a worker even though the amount of force exerted is negligible.

M - Medium Work -- Exerting 20 to 50 pounds of force occasionally, and/or 10 to 25 pounds of force frequently, and/or greater than negligible up to 10 pounds of force constantly to move objects. Physical Demand requirements are in excess of those for Light Work.

H - Heavy Work -- Exerting 50 to 100 pounds of force occasionally, and/or 25 to 50 pounds of force frequently, and/or 10 to 20 pounds of force constantly to move objects. Physical Demand requirements are in excess of those for Medium Work.

V - Very Heavy Work -- Exerting in excess of 100 pounds of force occasionally, and/or in excess of 50 pounds of force frequently, and/or in excess of 20 pounds of force constantly to move objects. Physical Demand requirements are in excess of those for Heavy Work.

In addition to the federal governments information on occupations and information relative to a training workforce, Independence Community College is totally committed to understanding its "customers." This commitment which is evidenced by a recent study conducted by a team of key community leaders including k-12 public education, local Chamber of Commerce, and Independence Community College. This study examined the perceptions of persons responsible for hiring individuals from our existing workforce and future workforce. This survey which was conducted in the spring of 1994 was a four county survey that inquired about general education , foundation, technical, and managerial skills for both current and future employees. Many of the questions asked were national questions of concern that were developed from the recent federal governments SCANS report (Secretaries Commission on Achieving Necessary Skills). Surprisingly, the local results parallel very closely those perceptions at the national level, with the exception of a more caring concern on the part of our local business and industry. This survey is shown in Appendix V. Results of the survey are also available on request.

H. Utilization of Funding Sources

One of the most significant objectives of any prospering and successful business would be the securing of state and federal training dollars to help off-set the tremendous investment that businesses and industries must make to be a compteitive with their production methods, techniques, and more especially, their human resource--on going training. As an assurance to Cessna, Independence Community College would make available a talented administration and staff that has demonstrated on numerous occasions positive results in submission of grants. Listed below are some of the examples of what would be available to Cessna if they were to locate in Independence. Moreover, aggressive external training funding will be pursued once Cessna has committed to locate in Independence.

1. State of Kansas Investment in Lifelong Learning

The State of Kansas Investment in Lifelong Learning (SKILL) programs finances immediate training projects for new employers through tax exempt, public purpose bonds issued by the Kansas Development Finance Authority. Training for employers may last for up to three years.

Independence Community College, in cooperation with Cessna Aircraft Corporation will submit a training proposal, subject to the approval of the Kansas Department of Commerce and the Governor's Council on Workforce Training. One such grant to be submitted would be the SKILL grant.

SKILL funds may be used to pay for:

- Curriculum planning and development
- Instructor salaries
- Video tape development
- Training manuals and textbooks
- Supplies and materials
- Travel expenses

In addition, up to 50% of a project's costs may be used to lease or purchase training equipment for local educational institutions. Based on figures we have received, Cessna will qualify for a $2 million SKILL grant.

2. Kansas Industrial Training (KIT)

The Kansas Industrial Training Program (KIT) is a comprehensive program of governmentally-funded training available for companies locating new facilities in Kansas or expanding existing facilities. These dollars are federal and sate monies that are available to Cessna for pre-employment, on-the-job-training, and classroom training. The negotiated costs for KIT training may include:

- Instructors salaries
- Travel expenses
- Video tape development
- Training manuals and textbooks
- Supplies and materials
- Minor equipment
- Curriculum planning and development

ICC has a rich tradition working with area industries to develop KIT grants to meet their training needs. (See Appendix X).

3. Kansas Industrial Retraining (KIR)

Kansas Industrial Retraining (KIR) grants are available to industries restructuring their operations through incorporation of existing technology, development and incorporation of new technology, and diversification of production or the development and implementation of new production activities. Independence Community College secured $20,320 for Sedan Floral in 1990 and $10,320 for Emerson Electric in 1992 to assist in meeting the retraining needs of employees.

In addition to the above mentioned funding agencies for training, Independence Community College would be directly involved with helping secure additional funding through the following state and local agencies:

- SBDC - Small Business Development Center
- MAMTC - Mid-America Manufacturing Technology Center
- ISO SECRETARIAT - International Standards Secretariat
- KEURP - Kansas Electric Utilities Research Program
- MID-AMERICA, INC.
- CDC - Certified Development Company
- KDOCH - Kansas Department of Commerce and Housing
- Business Location Center
- KTEC/CEDP - Kansas Technical Enterprise Corporation/Center for Design Development and Production
- Business Tele-Conferencing Center

I. Sharing Of Responsibilities Between Providers

A sharing of responsibilities necessary to train Cessna employees will come from four educational entities; K-12 (Greenbush), Area Vocational Technical Schools,

community colleges, and Regents' universities. As a primary focus, the Higher Educational Alliance Team (HEAT) illustrates how the southeast Kansas educational systems can operate. HEAT actively promotes "team support" to post-secondary education in southeast Kansas.

1. Higher Education Alliance Team (HEAT)

Brings Together: Allen County Community College
Coffeyville Community College
Fort Scott Community College
Independence Community College
Labette Community College
Neosho County Community College
Pittsburg State University

Purpose: To stimulate economic development by cooperative efforts in education and training.

Vision: A leadership alliance providing human resource development and partnerships for business assistance in Southeast Kansas.

Mission:

- Proactive communication of our available resources for human and business development,
- Implementation of flexible delivery systems to transport our resources to business at their point of need,
- Integrating the educational services of HEAT members to best meet the needs of the existing and emerging businesses,
- Creation of a seamless education system that ensures the long-term employment of our work force,
- Providing technical resource assistance through business/education partnerships,
- Initiation of a comprehensive "Total Quality" deployment system for HEAT resources.

in the most cost effective manner for all stakeholders, thereby increasing the quality of life for Southeast Kansas.

Action Plan:

- Creation of a regional economic development marketing plan,
- Development and maintenance of a database of employee/employer skills and training needs,
- Expansion of the regional Small Business Development Center (SBDC) office by implementing on-site Associate Centers at each community college,
- Establishment of a clearing house of available resources for business assistance,
- Cooperative training and retraining delivery.

2. The Southeast Kansas Education Service Center (ESC)

"Greenbush" which is located between Girard and St. Paul, Kansas acts as clearinghouse for educational services in southeast Kansas encompasses the following:

Mission: To provide equal educational opportunities for all students. Voluntary programs designed around customer needs allow rural school districts to receive services that otherwise would be unavailable, unaffordable, or can be offered more cost-effectively through a cooperative arrangement.

Brings Together: 72 school districts, comprised of 6,500 teacher and administrators, and 70,000 students located in 25 counties of southeast and east central Kansas. However, any Kansas school district or community college may participate in any ESC program.

Purpose: The Southeast Kansas Education Service Center makes government and public education more effective through the delivery of voluntary cooperative programs. ESC programs are constantly being developed, modified, and enhanced based on input received

from monthly meetings of a Superintendents forum, and specialized program committees formed to study specific issues and make program recommendations. ***Customer Driven to meet the educational needs of Southeast Kansas***

Vision: To continue to identify and fulfill consumer needs in education for Southeast Kansas and better prepare our future workforce --our young people--for a global economy

J. Measurement Of Training Effectiveness

It is projected that by the year 2000, three out of every four jobs will require some type of postsecondary education for the entry level positions. Moreover, for each high-tech job created, five to 15 support jobs also will be required. It has been established that by the end of this decade, 16 millions new jobs will be developed requiring kills that may or may not exist at this time. The question for our work force is--will our workers be competent to fill the jobs.

Peter Drunker writer is *Psychology Today*, "More than ever, education will fuel our economy and shape our society...but it cannot be education as usual...Education must recognize that learning is now a lifelong process of keeping abreast of change." Change comes very rapidly now and community college education plays a major role in facilitating the change process.

Southeast Kansas realizes our greatest asset to our region is the human resource. With that frame of reference, Independence Community College recognizes the importance of fostering and developing continuing education for our adult population as well as promoting technical education at the K-12 level. As an assurance in measurement of training effectiveness, Independence Community College has looked at the comprehensive technical training picture and entered into agreements with surrounding high schools via Tech Prep model. This national model that surfaced in the late 80's has come to fruition at Independence Community College. Tech Prep is designed to expand career opportunities for high school and middle school age students of southeast Kansas. With only 23% of the graduating seniors going into postsecondary education and furthering their education, Tech Prep targets the middle 50% of those students in high school that are seeking technical careers. What we would propose to do once selected for the Cessna

single engine manufacturing site would be to incorporate a Tech Prep model in to our local high schools geared toward preparing that 50% student population toward preparatory training possibly in the field of aircraft manufacturing. Of course, in designing this Tech Prep model for Cessna a critical element would be the articulation agreements that would have to exist between Unified School Districts (USD's) and Independence Community College. At present, Independence Community College has articulation agreements between various vocational programs and will continue to solicit additional programs such as aircraft maintenance and sheet metal fabrication work.

Six critical advantages for Tech Prep would be:

- Eliminate the need for extensive postsecondary remedial studies
- Duplication of curriculum between the high school and community college is drastically reduced
- Students receive "workplace skills" training at both the secondary and postsecondary level
- Interpersonal skills, technical writing and math skills are incorporated into the curriculums at both levels
- Expand on-the-job and apprentice training opportunities
- Graduates are more career focused and prepared for immediate entry into the workplace

In southeast Kansas, a consortium of six community colleges have joined together to develop and promote Tech Prep for this southeast quadrant of the state. Each community college is responsible for promoting Tech Prep within their service area. Illustrated in Appendix X the table shows how a bridge program that could be designed specifically for Cessna to encompass the student through Tech Prep or an entering adult student without Tech Prep. By utilizing this Tech Prep model for students enrolled in the public schools and/or the postsecondary model, students will be better positioned to get gainful employment upon completion of high school. We would also recommend that a design for each occupational profile be created for ***all*** positions at Cessna. These Kansas Occupational Profiles help validate to the student as well as the employer that certain cognitive and META-cognitive skills

have been reached during the training process. Illustrated in Appendix X shows typical profiles that could be utilized and modified for the Cessna trained employee for each occupational skill. Shown in Appendix Y are occupational profiles for Sheet Metal Worker, Machine Shop Worker, Aircraft Mechanic, Aircraft Electrician, etc. These profiles which are scored by the instructor help validate the training effectiveness during the educational/training process.

Without question, measuring one's effectiveness during the training process is crucial toward improving all skill levels from custodial to the plant CEO. Other indicators could be used to also measure training effectiveness through additional charting of statistical process control, time and effort reports and production schedule reports.

K. Projected Costs

1. Start-up Costs

Several factors and assumptions must be clear when accurately projecting the startup costs for the identified skill areas as noted by Cessna. Those identified skill areas include:

Assembler, installer - general
Assembler, radio and electrical
Electrician, aircraft
Flight Line Mechanic
Mechanic, general operational test
Painter, aircraft
Painter, aircraft apprentice or trainee
Sheet metal assembler
Supervisor, production

As an example in accurately projecting the costs an Assembler, Radio and Electrical employee, the *Dictionary of Occupational Titles*, has been identified on the previous pages, the recommendation of one month of training, with a level 3 ability in reasoning, a level 2 ability in mathematics, and a level 3 in language development. In addition to these identified cognitive skills, the Assembler, Radio and Electrical employee would be required to handle a physical strength demand

classification of Light. Collecting this kind of information for the building of aircraft would be essential for accurate labor cost projections.

Assembler, installer-general	806.361-014	S=12	R=4	M=3	L=3	P=M
Assembler, radio and electrical	729.384-026	S=1	R=3	M=2	L=3	P=L
Electric, aircraft	825.261-018	S=24	R=4	M=3	L=3	P=M
Flight Line Mechanic	621.281-014	S=24	R=4	M=4	L-4	P=M
Mechanic, general operational test	806.261-050	S=48	R=4	M=3	L=3	P=M
Painter, aircraft	845.381-014	S=12	R=3	M=2	L=3	P=M
Painter, aircraft apprentice or trainee	845.381-010	S=12	R=3	M=2	L=3	P=M
Sheet metal assembler	806.383-034	S=6	R=3	M=2	L=3	P=M
Supervisor, production	806.131-042	S=48	R=4	M=4	L-4	P=M

Note: See pages ____for related aircraft manufacturing jobs as defined by the *Dictionary of Occupational Titles.*

L. Risk Assessment

"Inadequate approaches to handling risk may result in bad policy. Fortunately, rational techniques for assessment now exist"...M. Granger Morgan

When identifying "risk assessment," two main categories should be considered--personnel and non-personnel. Under the non-personnel, EPA requirements impacting the epoxies and urethanes should be considered.

Personnel -

- Risk of poor pre-training/screening for potential ergonomic and personal behavior (smoking, excessive drinking). A simple, linear relation describes the average cancer risk incurred by smokers prove that a smoker that smokes 10

cigarettes a day generally increase the chances of lung cancer by a factor of 25; 20 cigarettes a day increase the factor by 50.

Solution: Providing a comprehensive Wellness Program to all employees. A model for this already exists at Independence Community College. This comprehensive wellness program could minimize carpal tunnel syndrome effects and other physical attributes that might be a potential liability causing lost work time and high absenteism.

Costs: Estimated 1.25% of the total annual training budget should be considered for expenditure on this area alone.

EPA and OSHA requirements relative to the finishing process of constructing painted aluminum aircraft, e.g., proper application and handling of epoxy paints, sealants and urethanes should be well understood by all employees.

Solution: Conduct bi-annual seminars via Independence Community College. This intensive educational training should be applicable to Cessna, as well as several other local business and industry that deal with application of similar-like materials.

Costs: 5% of annual training budget

- Work Environment

Solution: A work environment that is a pleasing, friendly. Create a "team environment" to help reduce or minimize absenteeism, scrap, and most importantly, misunderstandings and arguments on the production line.

Costs: 1.45% of annual training budget for TQM training

- Training Education - The most critical component of producing quality production aircraft is ongoing training. As a nation, the U. S. Turns out over 700,000 high school dropouts a year which in turn obviously creates a workforce crisis for entry level jobs, as well as creating an even greater burden for society to bare.

Solution: Continue current Cessna policy on providing cost-free education to any employee who receives a grade of "C" or higher in a post-secondary educational institution.

Actively seek at least 15-18% JTPA eligible "potential employees" with a stringent selection process. "Creaming" of eligible participants, those with the greatest chance of employee success is legal and should prove to be extremely beneficial to the cost of "doing business." There are many financial benefits that follow these federally funded, state administered dollars that can augment any personnel training plan.

Costs: 3.1% of annual training budget should go to Developmental Education, Technical Education and General Education.

- Health care -- Be selective on the personnel selection process for individuals who are presently in good health, regardless of physical disabilities, age, etc.

- Housing - A loan program for employees to have access to credit through Cessna to help offset any housing concerns that might effect employees.

It is a fact that our average age in the work force is increasing - it has been suggested also that women--who currently comprise 42% of the work force--will increase to 50% by year 2000. With women entering the work force we know that "Moms" are not staying home they will need to have some type of child care facility. Fifty percent of infants under the age of 12 months have mothers in the paid labor force. Women as a cohort have been found to be more reliable and more reliable on the job and more productive as a whole. While considering risk assignment for the new Cessna plan a child care facility would be strongly encouraged. It could be located on the premise, perhaps attached to the training facility.

Solution: Include in the initial industrial startup a quality child care facility that would provide care for children ages birth to twelve.

Costs: Initial startup facility (note section on projected costs). Program should be self-sustaining after the first six months. A fee structure should make the facility self-sustaining.

- Flexible work hours, compressed weekends, part-time, job sharing, extended parenting leave and some home-based employment, if applicable.

- While designing the human resource side of the plant, another employee risk factor that should be noted would be the development of support groups to deal with the ever increasing divorce rate, single parent issues, drug/substance abuse, and stress management.

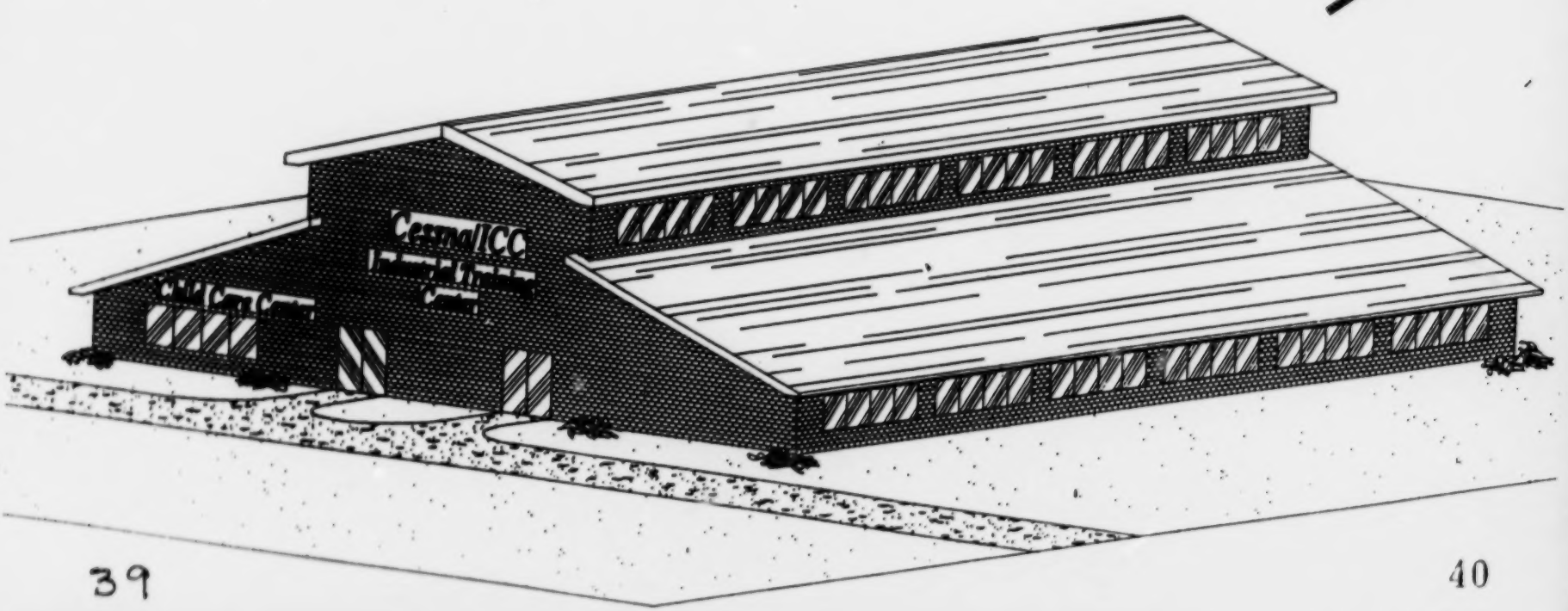
Regarding the investment for training, much of the initial risk, at least in the first 12-months of start- p of the operation the financial risk should be minimized due to various grants available through Kansas industrial funds, Kansas industrial retraining funds, Mid-America Manufacturing Technology Center funds, Kansas Technology Enterprise Corporation Funds, and the state of Kansas Investment in Lifelong Learning (SKILL) funds.

As a net result, there should be minimal risk in the human capital investment to Cessna in the initial startup phase due to federal, state, and local dollars that are dedicated to Cessna's success. However, as with any prosperous business there will be an increasing liability after the second year of operations to have in place accurate data collection job skills needed for the incoming labor force that could shift more toward the corporate side once the plant is finally established.

- **Proposed Training facility has 8,400 (70 X 120) square feet of classroom and shop/lab space with mezzanine storage available in the lab side of the facility. The proposed optional child care side of the facility would measure (30 X 100) 3000 square feet.**
- **Building is constructed of metal with brick veneer on two sides**
- **Child care facility could be located as shown or at the South end of building**
- **The facility would meet ADA requirements, including touch-button accessible entrances**

BUILDING

N



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CESSNA PERSONNEL SELECTION
Director of Job Training
Job Description

Recommended by:	President. CEO
Authorized by:	Cessna Board of Directors
Responsible to:	Plant Manager

The Director for Job Training, Independence Plant. under the supervision of the Plant Manager serves as a member of the Cessna educational training team. This position is responsible for coordination development and delivery of a comprehensive training plan specifically designed to meet the needs of Cessna, Independence, Kansas.

Scope of Work

A. Oversee the development of a customized curricula to meet the needs of Cessna. Independence. Kansas.

B. Provide team leadership in the development of Individualized Training Plans (ITP's) for all employees of Cessna. Independence.

C. Supervise and evaluate all educational/training staff and conduct semi-annual evaluations which include student. peer and employee performance-based evaluation.

D. Perform organizational tasks to coordinate education services with Independence Community College and other southeast Kansas educational entities for Cessna.

E. Work closely with Cessna management to ensure program efficiency.

F. Evaluate and modify training programs on an ongoing basis as needed.

G. Be directly responsible for staying abreast and submitting proposals to federal. state and local training funds/grants that may be available to aid in the educational/training process of Cessna.

H. To perform additional duties and responsibilities that may be assigned after consultation with the Cessna. Independence. Plant Manager.

The qualifications of the Director of Job Training will include experience related to the scope of work identified in this job description with an appropriate Master's degree required and a Doctorate degree preferred. A minimum of 5 years successful teaching experience and 3 years supervisory/administrative experience. Salary range $60. 000 to $70,000 commensurate with education and years of successful supervisory/administrative experience.

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CESSNA PERSONNEL SELECTION
Technical Occupational Instructor
Job Description

Recommended by:	President, CEO
Authorized by:	Cessna Board of Directors
Responsible to:	Director of Job Training

The Technical Occupational Instructor under the supervision of the Director for Job Training, Independence Plant, serves as a member of the Cessna educational training team. This position is responsible for the development and delivery of the latest techniques and methodologies relative to Technical/Occupational education. In addition to providing leadership in Technical/Occupation education this position must be attuned to state-of-the-art teaching methods and program competencies necessary for student/employee success.

SCOPE OF WORK

A. Develop technical/occupational curricula consistent with Cessna job specific competencies and implement innovative strategies for presentation and deliver the subject in a competency based/outcome based educational format.

B. Develop individual training plans (ITP) for each student that will include instructional elements, progress examinations, efficiency ratings, and final evaluations.

C. Work closely with the Job Training Director to identify program improvements.

D. Perform organizational tasks to provide the necessary feedback on tests and training assignments to give employee/students timely feedback.

E. Supervise, train and assist part-time instructors who may be utilized in technical occupational coursework/training.

F. Work directly with the Director of Training in the evaluation process collected from employee/students, peers and production team leaders.

G. To perform additional duties as may be assigned after consultation with the Director of Job Training.

The qualifications of a Technical Occupational Instructor will include experience related to the scope of work identified in this job description with an appropriate Bachelor's and/or current vocational teaching credentials required and a Master's degree preferred. A minimum of 3 years successful teaching experience necessary. Salary range $35, 000 to $38,000 commensurate with education and years of successful teaching experience.

CESSNA PERSONNEL SELECTION
Basic Skills Instructor
Job Description

Recommended by:	President, CEO
Authorized by:	Cessna Board of Directors
Responsible to:	Director of Job Training

The Basic Skills Instructor under the supervision of the Director for Job Training, Independence Plant, serves as a member of the Cessna educational training team. This position is responsible for the development and delivery of the latest techniques and methodologies relative to developmental education. In addition to providing leadership in Developmental Education studies, this position must be attuned to state-of-the-art pre-employment screening and assessment practices.

SCOPE OF WORK

A. Develop reading and writing curricula consistent with Cessna job specific competencies and implement innovative strategies for presentation and deliver the subject in a competency based educational format.

B. Develop mathematics curricula consistent with Cessna job specific competencies and deliver them in a competency based educational format.

C. Develop individual training plans (ITP) for each student that will include instructional elements, progress examinations, and final evaluations.

D. Work closely with the Job Training Director to identify program improvements.

E. Perform organizational tasks to provide the necessary feedback on tests and assignments to give students timely response

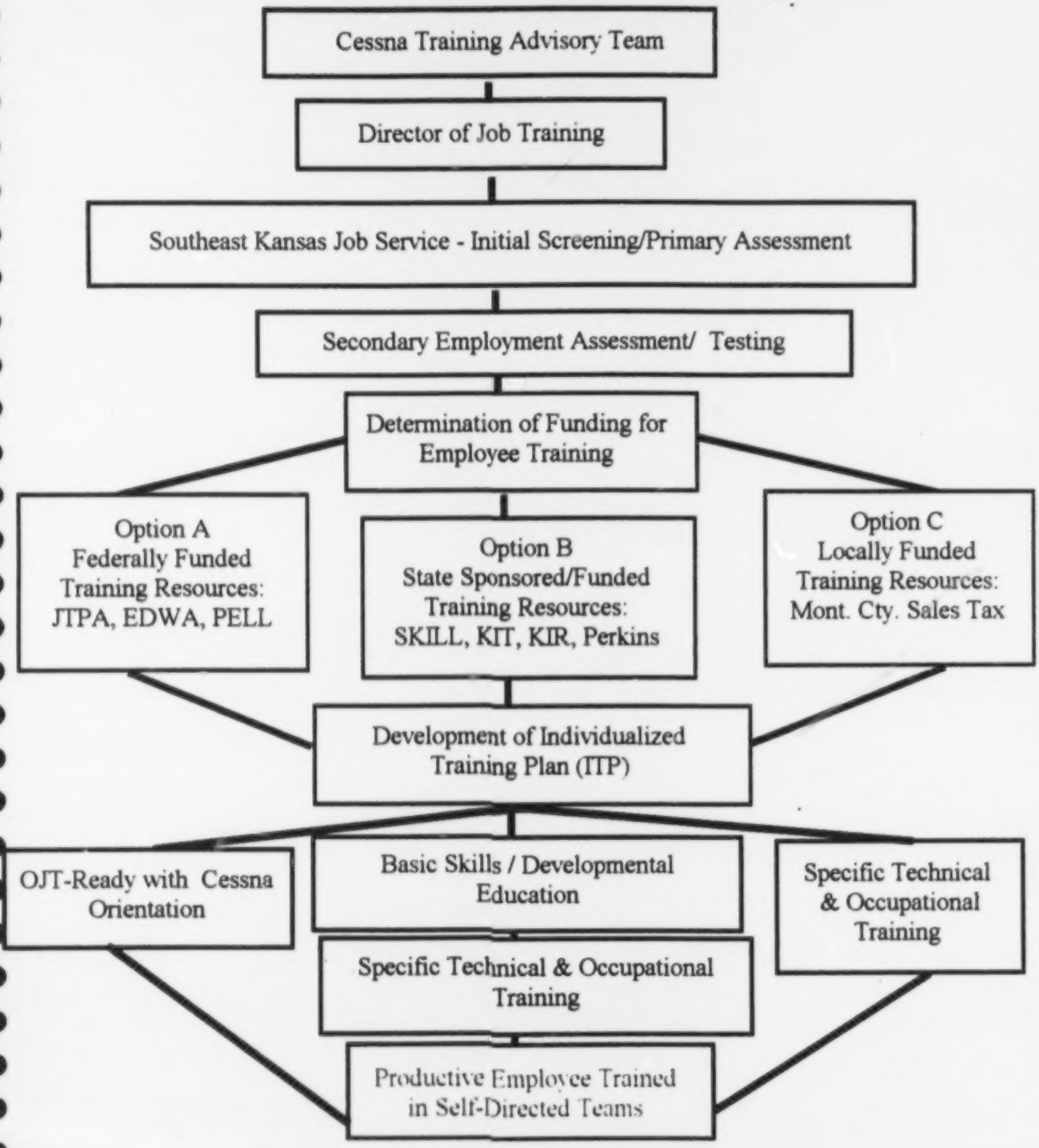
F. Supervise, train and assist part -time instructors that may be utilized in developmental studies.

G. Work directly with the Director of Training in the evaluation process collected from students, peers and production team leaders.

H. To perform additional duties as may be assigned after consultation with the Director of Job Training.

The qualifications of a Basic Skills Instructor will include experience related to the scope of work identified in this job description with an appropriate Bachelor's degree required and a Master's degree preferred. A minimum of 3 years successful teaching experience necessary. Salary range $35, 000 to $38,000 commensurate with education and years of successful teaching experience.

Cessna Training Assessment Model



GREENBUSH
(Girard, KS)

A consortium of 72 Unified School Districts located in southeast Kansas. This K-12 commitment to proving state-of-the-art classroom education and technology is evidenced by the heavy agenda outlined in their 1994-95 highlights.

ADMINISTRATIVE SERVICES
Accomplishments/Initiatives:

- Cooperative Purchasing saves school districts $625,000 annually; Cooperative Purchasing and High Volume Purchasing have saved school districts more than $1 million in the last 10 years. This is money that can then be used for educational purposes.
- A new School Nutrition Management Forum established last spring is creating an avenue for food service staff from more than 50 school districts to meet, discuss topics of interest, exchange ideas, and improve their knowledge and skills in order to better serve the nutritional needs of their students.

EDUCATIONAL FOUNDATION AND GRANT DEVELOPMENT
Accomplishments/Initiatives:

- Established Writing to Read labs in 10 SEK school districts providing instruction to more than 800 first grade students.
- Awarded 35 SEK teachers with mini grants through the Southeast Kansas Educational Foundation for the development of new educational opportunities.
- Annually provide more than 35,000 elementary students with innovative educational opportunities through the Life Education Center mobile classrooms.
- Assisted school districts in effectively responding to approximately 20 crisis and traumatic events last school year through the Regional Crisis Intervention Program.
- Developing a School Readiness curriculum that will assist parents and day care providers prepare children to enter school ready to learn.
- About 80 elementary children considered to be at extreme risk of school failure will be provided with additional instructional, social, and cultural programs.
- Will provide nearly 1000 children under the age of 3 and their parents with services available through the Parents As Teachers Consortium.
- IDL goes International--Utilizing the Southeast Kansas Interactive Distance Learning Network, cultural instruction and electronic field trips between SEK schools and selected sites in Japan, Russia, France and Mexico will facilitate face-to-face interaction designed to increase an overall understanding and sensitivity to other cultures. Another telecommunications strategy facilitated by this project will be the transmission of selected cultural and instructional programming through the Rural Vision television network. Unique continuing educational opportunities will be delivered to as many as 7500 rural homes in an effort to promote awareness of economic interdependence and opportunities for agricultural-related businesses in Southeast Kansas.

SOUTHEAST KANSAS EDUCATION SYSTEM

K thru 12 School Districts

Area Vocational Schools

6 Community Colleges

PSU

GOOD WILL TOURS, INC.

Post Office Box 198 Phone (316) 244-3218
201 South Main Street (800) 244-3218
Erie, Kansas 66733

ESTHER WATKINS
President

RALPH WATKINS
Vice President

RUTH McKINNEY
Secretary-Treasurer

Thu, Oct 20, 1994

Independence Community College
Dr. Herbert J. Swender
Dean of Instructional Services
College Avenue & Brookside Drive
Independence KS 67301

Dear Dr. Swender:

As the major motorcoach carrier in southeast Kansas, we want to accommodate your transportation needs which might be required for Cessna trainees. Our fleet of motorcoaches are Prevost, Le Mirage models, and are reliable as well as comfortable. They are all air-conditioned, rest room equipped, and safe. There are 43 seats in each coach providing plenty of leg room for short or long charters. We have the insurance coverage that is legally required by the federal government and would be happy to provide you a copy of it. Our reputation is impeccable as we have provided service for 36 years.

Listed below are the proposed quotes for possible destinations from Independence to:

Coffeyville	$250
Parsons	$250
Chanute	$253
Iola	$321
Ft. Scott	$438
Pittsburg	$351
Tulsa	$415
Wichita	$514

As you know, Good Will Tours has, on occasion, moved various organizations from Independence Community College. We pledge our commitment to work with and provide quality motorcoach service to Independence Community College and specifically the Cessna Corporation.

We are excited that Cessna is considering Independence knowing that their quality products benefits the industry, as well as, the southeast Kansas communities in general. If you have any questions or comments, feel free to give me a call at 800-244-3218. Our fax number is 316-244-3332.

Sincerely,

Mark Watkins

Mark Watkins

Kansas Department of Human Resources

Joan Finney, Governor
Joe Dick, Secretary

Coffeyville Office
1102 Elm Street
Coffeyville, KS 67337-5914
Telephone ... (316) 251-1800
Fax ..... (316) 251-8124

Chanute Office
119 N. Grant Street, P.O. Box 778
Chanute, KS 66720-0778
Telephone .... (316) 431-4950
Fax ..... (316) 431-2375

Independence Office
112 W. Laurel Street
Independence, KS 67301-3312
Telephone ... (316) 331-2700
Fax ..... (316) 331-0479

10/18/94

Dr. Don Schoening, President
Dr. Herb Swender, Dean of Instructional Services
Independence Community College
College & Brookside
Independence, Ks. 67301

Dear Sirs,

The purpose of this letter is to reaffirm Independence Job Services' commitment to assisting your institution in securing qualified students/trainees. This agency, as you know, worked closely with Independence Community College by doing the initial screening of all applications for the Teledyne training program. We look forward to being involved in any way that our expertise might be best utilized, should Independence Community College be again called upon to provide training for any specific employer.

Respectfully yours,

Doyal Saye

Doyal Saye, Human Resource Manager II

BEST COPY AVAILABLE

Business & Industry

Employment/Training Skills
SURVEY

Critical Employment Skills
Necessary For Business & Industrial Survival
In The 21st Century

Independence Community College

Independence Area Chamber of Commerce

Independence High School

"A Partnership Effort"

BUSINESS & INDUSTRY EMPLOYMENT/TRAINING SKILLS SURVEY OUTLINE

A. Current Employees

1. Entry Level
   a. General Education Skills
   b. Foundation Skills
   c. Technical Skills
   d. Managerial Skills

B. Current Employees

1. Managerial Level
   a. General Education Skills
   b. Foundation Skills
   c. Technical Skills
   d. Managerial Skills

C. Future Employees

1. Entry Level
   a. General Education Skills
   b. Foundation Skills
   c. Technical Skills
   d. Managerial Skills

D. Future Employees

1. Managerial Level
   a. General Education Skills
   b. Foundation Skills
   c. Technical Skills
   d. Managerial Skills

BUSINESS & INDUSTRY EMPLOYMENT/TRAINING SKILLS SURVEY

Introduction:

The purpose of this survey is to assess the Educational & Training needs of Business & Industry within Montgomery, Elk, Chautauqua, and Wilson counties.

Please consider two general groups of employees at your Business/Industry when responding to the survey -- *Current Employees and Future Employees*. Within these two sections are two levels, *Entry and Managerial*. Both levels include four sub-categories of skills: *General Education Skills, *Foundation Skills, *Technical Skills, and *Managerial Skills. The conclusion of the survey allows an opportunity for written responses to general statements. Your perceptions of these topic areas are vital to the future of our local workforce.

Directions: *Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
SA - Strongly Agree; A - Agree; I - Indifferent; D - Disagree; SD - Strongly Disagree

---

GENERAL INFORMATION:

1.	There is a need for a local skilled labor force for us to be competitive as a Business/Industry.....	SA	A	I	D	SD
2.	On-going training and work skill development is important to our Business/Industry.....	SA	A	I	D	SD
3.	There is a commitment by our Business/Industry that on-going training and development is important to the success of our company.....	SA	A	I	D	SD

General Information Continued . . .

4.	Assessing the skills, interests, and abilities of our current workforce would benefit our Business/Industry.....	SA	A	I	D	SD
5.	Our current training and development program is sufficient for our Business/Industry success.....	SA	A	I	D	SD
6.	Educational institutions are important to our Business/Industry success.....	SA	A	I	D	SD
7.	At this time, our company has all the training and education required to be successful. No additional training/education is required.	SA	A	I	D	SD

Directions: *Indicate your response by* **circling** **either "YES" or "NO".**

8.	Are your current employees evaluated/tested for basic job skills, (I.e. math, basic English skills)	Yes	No
9.	Are your future/potential employees evaluated/tested for basic job skills, (I.e. math, basic English skills)	Yes	No
10.	A comprehensive training center would benefit our Business/Industry	Yes	No
11.	(If "YES" to question 10) The location of a comprehensive educational training center would impact our Business/Industry's participation	Yes	No
12.	Our Business/Industry would consider supporting either monetarily or publicly a local education/training center	Yes	No

SECTION I
CURRENT EMPLOYEES
ENTRY LEVEL

GENERAL EDUCATION SKILLS: **CURRENT EMPLOYEES ENTRY LEVEL**

Directions: *Indicate the degree of importance of General Education Skills you perceive necessary for current employees at the entry level (Questions 13-28). Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

13.	Applied Basic Mathematics	1	2	3	4	5
14.	Pre-Algebra	1	2	3	4	5
15.	College Algebra	1	2	3	4	5
16.	Geometry	1	2	3	4	5
17.	Basic Electronics	1	2	3	4	5
18.	Oral Communication Skills	1	2	3	4	5
19.	Listening Skills	1	2	3	4	5
20.	Basic Accounting	1	2	3	4	5
21.	Computer Usage	1	2	3	4	5
22.	Computer Programming	1	2	3	4	5

General Education Skills Continued . . .

23.	Desk-Top Publishing	1	2	3	4	5
24.	Statistics	1	2	3	4	5
25.	Technical Reading	1	2	3	4	5
26.	General Writing Skills	1	2	3	4	5
27.	Technical Writing Skills	1	2	3	4	5
28.	Other:					
	_____	1	2	3	4	5

QUALITIES & ABILITIES: **CURRENT EMPLOYEES**
ENTRY LEVEL

Directions: *Rank the following skills in order of importance.* **(1 through 8, 1 = first choice)**

29.

_____ Decision Making	_____ Integrity
_____ Goal Setting	_____ Critical Thinking
_____ Personal Motivation	_____ Problem Solving
_____ Teamwork	_____ Other:_____

TECHNICAL SKILLS: **CURRENT EMPLOYEES**
ENTRY LEVEL

Directions: *Indicate the degree of importance of Technical Skills you perceive necessary for current employees at the entry level (Questions 30-48). Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

30.	Drafting	1	2	3	4	5
31.	CAD - Computer Aided Drafting	1	2	3	4	5
32.	CAM - Computer Aided Manufacturing	1	2	3	4	5
33.	Lathe-Wood	1	2	3	4	5
34.	Lathe-Metal	1	2	3	4	5
35.	Fork Lift Operation	1	2	3	4	5
36.	Crane Operation	1	2	3	4	5
37.	Machine Maintenance	1	2	3	4	5
38.	Wood Working	1	2	3	4	5
39.	Programmable Logic Controllers	1	2	3	4	5
40.	Computer Numerical Controlled Equipment (CNC)	1	2	3	4	5
41.	Computerized Accounting	1	2	3	4	5
42.	Engineering	1	2	3	4	5
43.	Welding	1	2	3	4	5
44.	Aluminum Welding	1	2	3	4	5

Technical Skills Continued . . .

45.	Robotics	1	2	3	4	5
46.	Production Automation Line	1	2	3	4	5
47.	Systems Analysis	1	2	3	4	5
48.	Other:					
	_____	1	2	3	4	5

CURRENT EMPLOYEES
MANAGEMENT LEVEL

GENERAL EDUCATION SKILLS: **CURRENT EMPLOYEES MANAGEMENT LEVEL**

Directions: *Indicate the degree of importance of General Education Skills you perceive necessary for current employees at the management level (Questions 49-64). Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

49.	Applied Basic Mathematics	1	2	3	4	5
50.	Pre-Algebra	1	2	3	4	5
51.	College Algebra	1	2	3	4	5
52.	Geometry	1	2	3	4	5

General Education Skills Continued . . .

53.	Basic Electronics	1	2	3	4	5
54.	Oral Communication Skills	1	2	3	4	5
55.	Listening Skills	1	2	3	4	5
56.	Basic Accounting	1	2	3	4	5
57.	Computer Usage	1	2	3	4	5
58.	Computer Programming	1	2	3	4	5
59.	Desk-Top Publishing	1	2	3	4	5
60.	Statistics	1	2	3	4	5
61.	Technical Reading	1	2	3	4	5
62.	General Writing Skills	1	2	3	4	5
63.	Technical Writing Skills	1	2	3	4	5
64.	Other:					
	_____	1	2	3	4	5

QUALITIES & ABILITIES: CURRENT EMPLOYEES MANAGEMENT LEVEL

Directions: *Rank the following skills in order of importance.* **(1 through 8, 1 = first choice)**

65.

_____ Decision Making	_____ Integrity
_____ Goal Setting	_____ Critical Thinking
_____ Personal Motivation	_____ Problem Solving
_____ Teamwork	_____ Other:_____

TECHNICAL SKILLS: CURRENT EMPLOYEES
MANAGEMENT LEVEL

Directions: *Indicate the degree of importance of Technical Skills you perceive necessary for current employees at the management level (Questions 66-84). Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

66.	Drafting	1	2	3	4	5
67.	CAD - Computer Aided Drafting	1	2	3	4	5
68.	CAM - Computer Aided Manufacturing	1	2	3	4	5
69.	Lathe-Wood	1	2	3	4	5
70.	Lathe-Metal	1	2	3	4	5
71.	Fork Lift Operation	1	2	3	4	5
72.	Crane Operation	1	2	3	4	5
73.	Machine Maintenance	1	2	3	4	5
74.	Wood Working	1	2	3	4	5
75.	Programmable Logic Controllers	1	2	3	4	5
76.	Computer Numerical Controlled Equipment (CNC)	1	2	3	4	5
77.	Computerized Accounting	1	2	3	4	5
78.	Engineering	1	2	3	4	5
79.	Welding	1	2	3	4	5

Technical Skills Continued . . .

80.	Aluminum Welding	1	2	3	4	5
81.	Robotics	1	2	3	4	5
82.	Production Automation Line	1	2	3	4	5
83.	Systems Analysis	1	2	3	4	5
84.	Other:					
	_____	1	2	3	4	5

MANAGERIAL SKILLS: CURRENT EMPLOYEES MANAGEMENT LEVEL

Directions: *Indicate the degree of importance of Managerial Skills you perceive necessary for current employees at the managerial level (Questions 85-106). Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

85.	Leadership	1	2	3	4	5
86.	Goal Setting	1	2	3	4	5
87.	Motivation	1	2	3	4	5
88.	Decision-Making	1	2	3	4	5
89.	Negotiation	1	2	3	4	5
90.	Team Building	1	2	3	4	5
91.	Grant Writing	1	2	3	4	5
92.	Written Communication	1	2	3	4	5

Managerial Skills Continued . . .

93.	Oral Communication	1	2	3	4	5
94.	Foreign Language Ability	1	2	3	4	5
95.	Employee Recruitment/Hiring	1	2	3	4	5
96.	Ethics	1	2	3	4	5
97.	Management by Objectives	1	2	3	4	5
98.	Salesmanship	1	2	3	4	5
99.	Critical Thinking	1	2	3	4	5
100.	Problem-Solving	1	2	3	4	5
101.	Assertiveness	1	2	3	4	5
102.	Conflict Management	1	2	3	4	5
103.	Employee Counseling and Coaching	1	2	3	4	5
104.	Personnel Development	1	2	3	4	5
105.	Short and Long Range Planning Skills	1	2	3	4	5
106.	Other:					
	_____	1	2	3	4	5

SECTION II
FUTURE EMPLOYEES
ENTRY LEVEL

GENERAL EDUCATION SKILLS: FUTURE EMPLOYEES ENTRY LEVEL

Directions: *Indicate the degree of importance of General Education Skills you perceive necessary for future employees at the entry level (Questions 107-122). Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

107.	Applied Basic Mathematics	1	2	3	4	5
108.	Pre-Algebra	1	2	3	4	5
109.	College Algebra	1	2	3	4	5
110.	Geometry	1	2	3	4	5
111.	Basic Electronics	1	2	3	4	5
112.	Oral Communication Skills	1	2	3	4	5
113.	Listening Skills	1	2	3	4	5
114.	Basic Accounting	1	2	3	4	5
115.	Computer Usage	1	2	3	4	5
116.	Computer Programming	1	2	3	4	5

General Education Skills Continued . . .

117.	Desk-Top Publishing	1	2	3	4	5
118.	Statistics	1	2	3	4	5
119.	Technical Reading	1	2	3	4	5
120.	General Writing Skills	1	2	3	4	5
121.	Technical Writing Skills	1	2	3	4	5
122.	Other:					
	_____	1	2	3	4	5

QUALITIES & ABILITIES: FUTURE EMPLOYEES ENTRY LEVEL

Directions: *Rank the following skills in order of importance.* **(1 through 8, 1 = first choice)**

123.

_____ Decision Making	_____ Integrity
_____ Goal Setting	_____ Critical Thinking
_____ Personal Motivation	_____ Problem Solving
_____ Teamwork	_____ Other: _____

TECHNICAL SKILLS: **FUTURE EMPLOYEES**
ENTRY LEVEL

Directions: *Indicate the degree of importance of Technical Skills you perceive necessary for future employees at the entry level (Questions 124-142). Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

124.	Drafting	1	2	3	4	5
125.	CAD - Computer Aided Drafting	1	2	3	4	5
126.	CAM - Computer Aided Manufacturing	1	2	3	4	5
127.	Lathe-Wood	1	2	3	4	5
128.	Lathe-Metal	1	2	3	4	5
129.	Fork Lift Operation	1	2	3	4	5
130.	Crane Operation	1	2	3	4	5
131.	Machine Maintenance	1	2	3	4	5
132.	Wood Working	1	2	3	4	5
133.	Programmable Logic Controllers	1	2	3	4	5
134.	Computer Numerical Controlled Equipment (CNC)	1	2	3	4	5
135.	Computerized Accounting	1	2	3	4	5
136.	Engineering	1	2	3	4	5
137.	Welding	1	2	3	4	5

Technical Skills Continued . . .

138.	Aluminum Welding	1	2	3	4	5
139.	Robotics	1	2	3	4	5
140.	Production Automation Line	1	2	3	4	5
141.	Systems Analysis	1	2	3	4	5
142.	Other:					
	_____	1	2	3	4	5

FUTURE EMPLOYEES
MANAGEMENT LEVEL

GENERAL EDUCATION SKILLS: FUTURE EMPLOYEES MANAGEMENT LEVEL

Directions: *Indicate the degree of importance of General Education Skills you perceive necessary for future employees at the management level (Questions 143-158). Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

143.	Applied Basic Mathematics	1	2	3	4	5
144.	Pre-Algebra	1	2	3	4	5
145.	College Algebra	1	2	3	4	5
146.	Geometry	1	2	3	4	5

General Education Skills Continued . . .

147.	Basic Electronics	1	2	3	4	5
148.	Oral Communication Skills	1	2	3	4	5
149.	Listening Skills	1	2	3	4	5
150.	Basic Accounting	1	2	3	4	5
151.	Computer Usage	1	2	3	4	5
152.	Computer Programming	1	2	3	4	5
153.	Desk-Top Publishing	1	2	3	4	5
154.	Statistics	1	2	3	4	5
155.	Technical Reading	1	2	3	4	5
156.	General Writing Skills	1	2	3	4	5
157.	Technical Writing Skills	1	2	3	4	5
158.	Other:					
	_____	1	2	3	4	5

QUALITIES & ABILITIES: FUTURE EMPLOYEES MANAGEMENT LEVEL

Directions: *Rank the following skills in order of importance.* **(1 through 8, 1 = first choice)**

159.

_____ Decision Making	_____ Integrity
_____ Goal Setting	_____ Critical Thinking
_____ Personal Motivation	_____ Problem Solving
_____ Teamwork	_____ Other:_____

TECHNICAL SKILLS: **FUTURE EMPLOYEES**
MANAGEMENT LEVEL

Directions: *Indicate the degree of importance of Technical Skills you perceive necessary for future employees at the management level (Questions 160-178). Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

160.	Drafting	1	2	3	4	5
161.	CAD - Computer Aided Drafting	1	2	3	4	5
162.	CAM - Computer Aided Manufacturing	1	2	3	4	5
163.	Lathe-Wood	1	2	3	4	5
164.	Lathe-Metal	1	2	3	4	5
165.	Fork Lift Operation	1	2	3	4	5
166.	Crane Operation	1	2	3	4	5
167.	Machine Maintenance	1	2	3	4	5
168.	Wood Working	1	2	3	4	5
169.	Programmable Logic Controllers	1	2	3	4	5
170.	Computer Numerical Controlled Equipment (CNC)	1	2	3	4	5
171.	Computerized Accounting	1	2	3	4	5
172.	Engineering	1	2	3	4	5
173.	Welding	1	2	3	4	5

Technical Skills Continued . . .

174.	Aluminum Welding	1	2	3	4	5
175.	Robotics	1	2	3	4	5
176.	Production Automation Line	1	2	3	4	5
177.	Systems Analysis	1	2	3	4	5
178.	Other:					
	_____	1	2	3	4	5

MANAGERIAL SKILLS: FUTURE EMPLOYEES MANAGEMENT LEVEL

Directions: *Indicate the degree of importance of Managerial Skills you perceive necessary for future employees at the management level (Questions 179-200). Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

179.	Leadership	1	2	3	4	5
180.	Goal Setting	1	2	3	4	5
181.	Motivation	1	2	3	4	5
182.	Decision-Making	1	2	3	4	5
183.	Negotiation	1	2	3	4	5
184.	Team Building	1	2	3	4	5
185.	Grant Writing	1	2	3	4	5

Managerial Skills Continued . . .

186.	Written Communication	1	2	3	4	5
187.	Oral Communication	1	2	3	4	5
188.	Foreign Language Ability	1	2	3	4	5
189.	Employee Recruitment/Hiring	1	2	3	4	5
190.	Ethics	1	2	3	4	5
191.	Management by Objectives	1	2	3	4	5
192.	Salesmanship	1	2	3	4	5
193.	Critical Thinking	1	2	3	4	5
194.	Problem-Solving	1	2	3	4	5
195.	Assertiveness	1	2	3	4	5
196.	Conflict Management	1	2	3	4	5
197.	Employee Counseling and Coaching	1	2	3	4	5
198.	Personnel Development	1	2	3	4	5
199.	Short and Long Range Planning Skills	1	2	3	4	5
200.	Other:					
	_____	1	2	3	4	5

GENERAL RESPONSE:

Directions: *Please feel free to use a ball-point pen or soft-leaded pencil and circle the response which most closely corresponds with your views.*

Circle your response:
1 - Essential 2 - Very Important 3 - Important 4 - Slightly Important 5- Not Important

---

201. Does your company (or department) need training in any of the following specialized areas?

A.	Alcohol and Drug Abuse	1	2	3	4	5
B.	Coping w/Organizational Stress	1	2	3	4	5
C.	Federal Legislation	1	2	3	4	5
D.	Union/Management Relations	1	2	3	4	5
E.	Retirement Planning	1	2	3	4	5
F.	New Product Development	1	2	3	4	5
G.	Wellness/Health Management	1	2	3	4	5
H.	OSHA	1	2	3	4	5
I.	Safety Compliance	1	2	3	4	5
J.	Career Planning	1	2	3	4	5
K.	Market Research	1	2	3	4	5
L.	Advertisement	1	2	3	4	5
M.	Environmental	1	2	3	4	5
N.	Americans with Disabilities Act	1	2	3	4	5
O.	Equal Employment Opportunity Commission	1	2	3	4	5

General Response Continued . . .

P. Public Health.....1 2 3 4 5

Q. Other:

_____.....1 2 3 4 5

202. In your opinion, what are the most common difficulties/challenges experienced by future employees within your Business/Industry?

_____

_____

_____

_____

203. In your opinion, what specifically can area educational institutions, e.g., U.S.D. public schools, community colleges, universities do to assist you in meeting your present and future training needs?

_____

_____

_____

_____

204. Would you consider participating in a training advisory council to assist in developing classes and programs to meet the training needs of area business and industry?

Yes _____ No _____

You are important to the success of this study.

Is there anything else that you would like to tell us about educational/training programs? If so, please use the back cover of the survey for that purpose. Thank you for your assistance. If you have any questions or comments, do not hesitate to contact us at the Chamber office. Phone (316) 331-1890.

Thanks to Automotive Controls Corporation, Independence, KS,
for their input towards this study and
providing funds for its distribution.

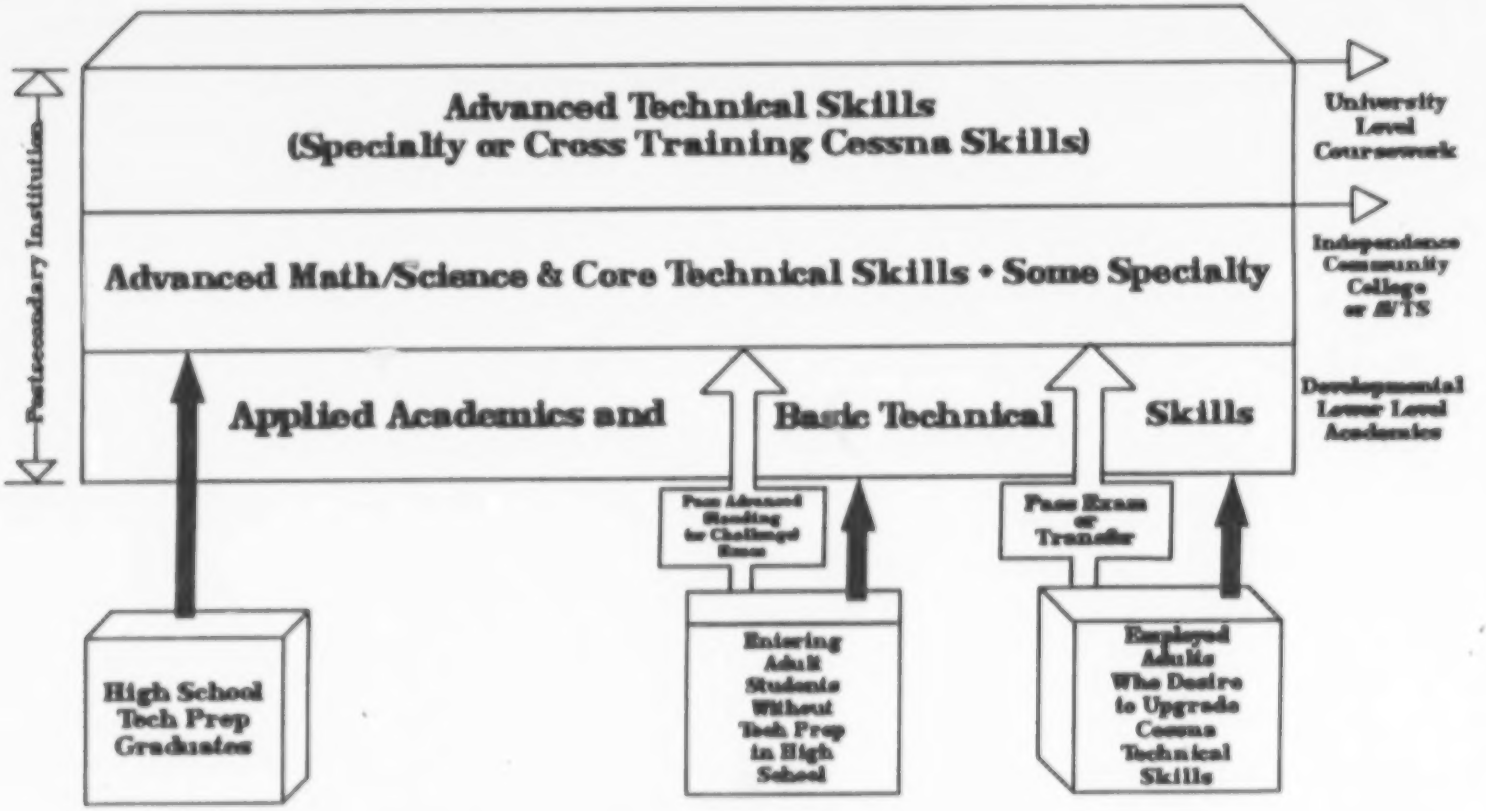
KIT Grants Funded:

TELEDYNE (now Sabreliner)	1986-1987	Voc. Ed.	$79,488.00
		Commerce	32,600.00
		Industry	0.00
	TOTAL		$112,088.00
	1987-1988	Voc. Ed.	56,420.00
		Commerce	0.00
		Industry	69,120.00
		TOTAL	$125,540.00
	1988-1989	Voc. Ed.	$22,040.00
		Commerce	20,500.00
		Industry	10,000.00
		TOTAL	$52,540.00
WOODTECH	1987-1988	Voc. Ed.	$32,109.00
		Commerce	0.00
		Industry	32,520.00
		TOTAL	$64,629.00
	1988-1989	Voc. Ed.	$10,800.00
		Commerce	10,000.00
		Industry	21,600.00
		TOTAL	$42,400.00
GRAGG CABINET	1988-1989	Voc. Ed.	$14,742.00
		Commerce	13,650.00
		Industry	12,000.00
		TOTAL	$40,392.00
	1989-1990	Voc. Ed.	$6,480.00
		Commerce	22,020.00
		Industry	14,000.00
		TOTAL	$42,500.00
A.C.C.	1989-1990	Voc. Ed.	$9,526.00
		Commerce	20,400.00
		Industry	43,200.00
		TOTAL	$73,126.00

M & M Moulders	1989-1990	Voc. Ed.	$4,860.00
		Commerce	10,838.00
		Industry	12,838.00
		TOTAL	$28,536.00
FIBERGLASS FORMS	1989-1990	Voc. Ed.	$10,260.00
		Commerce	15,600.00
		Industry	45,000.00
		TOTAL	$70,860.00
ENGINEERED SYSTEMS & EQUIPMENT	1989-1990	Voc. Ed.	$7,560.00
		Commerce	17,324.00
		Industry	44,608.00
		TOTAL	$69,492.00
MONARCH	1990	Voc. Ed.	$12,528.00
		Commerce	29,300.00
		Industry	4,000.00
		TOTAL	$45,828.00
FIBERGLASS ENGINEERING	1990-1991 (Cobalt)	Voc. Ed.	$3,240.00
		Commerce	29,460.00
		Industry	14,720.00
		TOTAL	$47,420.00
KANSAS AVIATION OF INDEPENDENCE	1992-1993	Commerce	$8,864.00
		Industry	9,900.00
		TOTAL	$18,764.00
NEODESHA EAGLE BUILDERS	1992-1993	Commerce	$12,000.00
		Industry	6,000.00
		TOTAL	$18,000.00
TOTALS		VOC. ED.	$270,053.00
		COMMERCE	242,556.00
		INDUSTRY	339,506.00
GRAND TOTAL			$852,115.00

CESSNA

HOW DOES A "BRIDGE PROGRAM" FIT INTO A TECH PREP CURRICULUM?


Advanced Technical Skills
(Specialty or Cross Training Cessna Skills)
University Level Coursework
Advanced Math/Science & Core Technical Skills • Some Specialty
Independence Community College or AVTS
Applied Academics and
Basic Technical
Skills
Developmental Lower Level Academics
Postsecondary Institution
Pass Advanced Standing by Challenge Exam
Pass Exam or Transfer
High School Tech Prep Graduates
Entering Adult Students Without Tech Prep in High School
Employed Adults Who Desire to Upgrade Cessna Technical Skills

COMPETENCIES

"DRAWING BOARD" FOR A TECH-PREP PROGRAM

FIELD OF SPECIALIZATION _____

	HIGH SCHOOL				POSTSECONDARY			
SUBJECT	Freshman	Sophomore	Junior	Senior	Freshman A	Freshman B	Sophomore A	Sophomore B
MATH								
ENGLISH								
SCIENCE								
COMPUTERS								
HUMANITIES								
OTHER								
OTHER								
TECHNICAL CORE								
TECHNICAL CORE								
TECHNICAL SPECIALTY								
TECHNICAL SPECIALTY								

KANSAS OCCUPATIONAL PROFILE

Name _____ SS# ___/___/___

School _____ Instructor _____

ENROLLMENT DATE ___/___/___ COMPLETION DATE ___/___/___ HOURS COMPLETED _____

I certify that the student received training in the areas indicated.

Student Signature _____ Date ___/___/___

Instructor Signature _____ Date ___/___/___

Administrator Signature _____ Date ___/___/___

RATING SCALE:
3 Skilled-Works independently
2 Limited Skill-Requires assistance to perform task
1 Skill Undeveloped-Received instruction but has not developed skill
0 No Exposure-No instruction or training in this area

DIRECTIONS: Evaluate the student by checking the appropriate number to indicate the degree of competency reached. Rate each task to reflect employability readiness.

A. PERFORM GROUND OPERATIONS AND SERVICING DUTIES

3210 1. Start aircraft
3210 2. Taxi aircraft
3210 3. Move aircraft
3210 4. Service aircraft
3210 5. Secure aircraft
3210 6. Perform as signal person for taxiing aircraft
3210 7. Perform engine run-up
3210 8. Identify and select fuels
3210 9. Identify and select lubricants
3210 10. Operate radios
3210 11. _____
3210 12. _____

B. PERFORM CLEANING AND CORROSION CONTROL OPERATIONS

3210 1. Identify cleaning materials
3210 2. Select cleaning materials
3210 3. Perform aircraft cleaning and corrosion control
3210 4. Identify and utilize appropriate equipment for cleaning and corrosion control
3210 5. Identify corrosion type
3210 6. _____
3210 7. _____

C. USE MAINTENANCE PUBLICATIONS AND MAINTAIN FORMS AND RECORDS

3210 1. Select and use FAA and manufacturer's specifications and related regulations
3210 2. Read and interpret technical data
3210 3. Write descriptions of aircraft condition and work performed
3210 4. Complete required maintenance forms, records, and inspection reports
3210 5. _____
3210 6. _____

D. PERFORM ASSEMBLY AND RIGGING

3210 1. Identify and select aircraft hardware and materials
3210 2. _____
3210 3. _____

E. MAINTAIN AIRCRAFT LANDING GEAR SYSTEMS

3210 1. Inspect and repair retractable landing gear systems and components
3210 2. Inspect and repair landing gear struts
3210 3. Inspect and repair brakes, wheels, tires, and steering
3210 4. Inspect and repair ski, float, and hull installations
3210 5. Inspect and repair helicopter skids
3210 6. _____
3210 7. _____

F. MAINTAIN HYDRAULIC AND PNEUMATIC POWER SYSTEMS

3210 1. Repair hydraulic and pneumatic power system components
3210 2. Identify and select hydraulic fluids and seals
3210 3. Inspect and repair hydraulic and pneumatic power systems
3210 4. Identify and utilize appropriate hydraulic and pneumatic equipment
3210 5. Inspect, check, troubleshoot, service, and repair ice and rain control systems
3210 6. _____
3210 7. _____

G. MAINTAIN CABIN ATMOSPHERE CONTROL SYSTEMS

3210 1. Repair heating, cooling, air conditioning, pressurization, and oxygen system components
3210 2. Inspect, service, and repair heating, air conditioning, and pressurization systems
3210 3. Inspect, check, troubleshoot, service, and repair oxygen systems
3210 4. _____
3210 5. _____

H. MAINTAIN AIRCRAFT AND ENGINE INSTRUMENTS AND AVIONICS SYSTEMS

3210 1. Install instruments
3210 2. Inspect and repair heading, speed, altitude, attitude, and position systems
3210 3. Inspect, check, and service auto-pilot and approach control systems
3210 4. Inspect and service electronic communications and navigation systems
3210 5. Inspect and repair antenna and electronic equipment installations
3210 6. Identify and utilize special electronic tools and equipment
3210 7. Troubleshoot, service, and repair fluid rate-of-flow indicating systems

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3210	8.	Inspect, check, service, and repair engine pressure, temperature, and RPM indicating systems
3210	9.	_____
3210	10.	_____
	I.	**INSPECT AND REPAIR AIRCRAFT ELECTRICAL SYSTEMS**
3210	1.	Repair aircraft electrical system components
3210	2.	Install and service electric indicators, protective devices, wiring, and controls
3210	3.	Inspect and repair AC and DC current electrical systems
3210	4.	Identify and utilize appropriate electrical tools and equipment
3210	5.	Inspect, check, and service speed and takeoff warning systems, electrical brake controls, and anti-skid systems
3210	6.	Inspect, check, troubleshoot, service, and repair landing gear position indicating and warning systems
3210	7.	Repair engine electrical system components
3210	8.	Install engine electrical wiring, controls, switches, indicators, and protective devices
3210	9.	Determine relationship of voltage, current, and resistance in electrical circuits
3210	10.	Compute and measure capacitance and inductance
3210	11.	Measure voltage, current, resistance, and continuity
3210	12.	Read and interpret electrical circuit diagrams
3210	13.	Inspect batteries
3210	14.	Service batteries
3210	15.	_____
3210	16.	_____
	J.	**INSPECT AIRCRAFT AND ENGINE FIRE PROTECTION SYSTEMS**
3210	1.	Inspect, check, and service smoke and carbon monoxide detection systems
3210	2.	Inspect, check, service, troubleshoot, and repair aircraft fire detection and extinguishing systems
3210	3.	Inspect, check, service, troubleshoot, and repair engine fire detection and extinguishing systems
3210	4.	Perform special safety wiring
3210	5.	_____
3210	6.	_____

	K.	**MAINTAIN INDUCTION SYSTEMS**
3210	1.	Inspect, check, troubleshoot, service, and repair turbo-charger system
3210	2.	Inspect, check, service, and repair heat exchangers (inner-coolers) and super-chargers
3210	3.	Inspect, check, service, and repair carburetor air intake and induction systems
3210	4.	_____
3210	5.	_____
	L.	**MAINTAIN ENGINE COOLING SYSTEMS**
3210	1.	Repair engine cooling system components
3210	2.	Inspect, check, service, troubleshoot, and repair cooling systems
3210	3.	_____
3210	4.	_____
	M.	**MAINTAIN AIRCRAFT PROPELLERS/ROTORS**
3210	1.	Inspect, check, service, and repair propeller synchronizing and ice control systems
3210	2.	Identify and select propeller lubricants
3210	3.	Track and balance propellers
3210	4.	Repair propeller control system components
3210	5.	Inspect and repair fixed-pitch, constant speed, and feathering propellers and systems
3210	6.	Troubleshoot, remove, and install propellers
3210	7.	Track and balance main rotors
3210	8.	Track and adjust tail rotors
3210	9.	Inspect, service, troubleshoot, and repair rotor systems
3210	10.	_____
3210	11.	_____
	N.	**INSPECT AND REPAIR TURBO-JET AND TURBO-PROP ENGINES**
3210	1.	Overhaul turbine engine
3210	2.	Inspect and repair turbine engine installation
3210	3.	Inspect, troubleshoot, and adjust turbine engine components
3210	4.	_____
3210	5.	_____

KANSAS OCCUPATIONAL PROFILE

AIRCRAFT MECHANICS SERIES - AIRCRAFT ENVIRONMENTAL MECHANIC 91/

Name _____ SS# ___/___/___

School _____ Instructor _____

ENROLLMENT DATE ___/___/___ COMPLETION DATE ___/___/___ HOURS COMPLETED _____

I certify that the student received training in the areas indicated.

Student Signature _____ Date ___/___/___

Instructor Signature _____ Date ___/___/___

Administrator Signature _____ Date ___/___/___

RATING SCALE:
3 Skilled-Works independently
2 Limited Skill-Requires assistance to perform task
1 Skill Undeveloped-Received instruction but has not developed skill
0 No Exposure-No instruction or training in this area

DIRECTIONS: Evaluate the student by checking the appropriate number to indicate the degree of competency reached. Rate each task to reflect employability readiness.

	A.	**PERFORM GROUND OPERATIONS AND SERVICING DUTIES**	
3210	1	Start aircraft	
3210	2	Taxi aircraft	
3210	3	Move aircraft	
3210	4	Service aircraft	
3210	5	Secure aircraft	
3210	6	Perform as signal person for taxiing aircraft	
3210	7	Perform engine run-up	
3210	8	Identify and select fuels	
3210	9	Identify and select lubricants	
3210	10	Operate radios	
3210	11	_____	
3210	12	_____	
	B.	**PERFORM CLEANING AND CORROSION CONTROL OPERATIONS**	
3210	1	Identify cleaning materials	
3210	2	Select cleaning materials	
3210	3	Perform aircraft cleaning and corrosion control	
3210	4	Identify and utilize appropriate equipment for cleaning and corrosion control	
3210	5	Identify corrosion type	
3210	6	_____	
3210	7	_____	
	C.	**USE MAINTENANCE PUBLICATIONS AND MAINTAIN FORMS AND RECORDS**	
3210	1	Select and use FAA and manufacturer's specifications and related regulations	
3210	2	Read and interpret technical data	
3210	3	Write descriptions of aircraft condition and work performed	
3210	4	Complete required maintenance forms, records, and inspection reports	
3210	5	_____	
3210	6	_____	
	D.	**PERFORM ASSEMBLY AND RIGGING**	
3210	1.	Identify and select aircraft hardware and materials	
3210	2.	_____	
3210	3.	_____	
	E.	**MAINTAIN HYDRAULIC AND PNEUMATIC POWER SYSTEMS**	
3210	1.	Repair hydraulic and pneumatic power system components	
3210	2.	Identify and select hydraulic fluids and seals	
3210	3.	Inspect and repair hydraulic and pneumatic power systems	
3210	4.	Identify and utilize appropriate hydraulic and pneumatic equipment	
3210	5.	Inspect, check, troubleshoot, service, and repair ice and rain control systems	
3210	6.	_____	
3210	7.	_____	
	F.	**MAINTAIN CABIN ATMOSPHERE CONTROL SYSTEMS**	
3210	1.	Repair heating, cooling, air conditioning, pressurization, and oxygen system components	
3210	2.	Inspect, service, and repair heating, air conditioning, and pressurization systems	
3210	3.	Inspect, check, troubleshoot, service, and repair oxygen systems	
3210	4.	_____	
3210	5.	_____	
	G.	**MAINTAIN AIRCRAFT AND ENGINE INSTRUMENTS AND AVIONICS SYSTEMS**	
3210	1.	Install instruments	
3210	2.	Inspect and repair heading, speed, altitude, attitude, and position systems	
3210	3.	Inspect, check, and service auto-pilot and approach control systems	
3210	4.	Inspect and service electronic communications and navigation systems	
3210	5.	Inspect and repair antenna and electronic equipment installations	
3210	6.	Identify and utilize special electronic tools and equipment	
3210	7.	Troubleshoot, service, and repair fluid rate-of-flow indicating systems	
3210	8.	Inspect, check, service, and repair engine pressure, temperature, and RPM indicating systems	
3210	9.	_____	
3210	10.	_____	
	H.	**INSPECT AND REPAIR AIRCRAFT ELECTRICAL SYSTEMS**	
3210	1.	Repair aircraft electrical system components	
3210	2.	Install and service electric indicators, protective devices, wiring, and controls	
3210	3.	Inspect and repair AC and DC current electrical systems	

3210 4 Identify and utilize appropriate electrical tools and equipment
3210 5 Inspect, check, and service speed and takeoff warning systems, electrical brake controls, and anti-skid systems
3210 6 Inspect, check, troubleshoot, service, and repair landing gear position indicating and warning systems
3210 7 Repair engine electrical system components
3210 8 Install engine electrical wiring, controls, switches, indicators, and protective devices
3210 9 Determine relationship of voltage, current, and resistance in electrical circuits
3210 10 Compute and measure capacitance and inductance
3210 11 Measure voltage, current, resistance, and continuity
3210 12 Read and interpret electrical circuit diagrams
3210 13 Inspect batteries
3210 14 Service batteries
3210 15 _____
3210 16 _____

I. INSPECT AIRCRAFT AND ENGINE FIRE PROTECTION SYSTEMS

3210 1 Inspect, check, and service smoke and carbon monoxide detection systems
3210 2 Inspect, check, service, troubleshoot, and repair aircraft fire detection and extinguishing systems
3210 3 Inspect, check, service, troubleshoot, and repair engine fire detection and extinguishing systems
3210 4 Perform special safety wiring
3210 5 _____
3210 6 _____

J. MAINTAIN INDUCTION SYSTEMS

3210 1 Inspect, check, troubleshoot, service, and repair turbo-charger system
3210 2 Inspect, check, service, and repair heat exchangers (inner-coolers) and superchargers
3210 3 Inspect, check, service, and repair carburetor air intake and induction systems
3210 4 _____
3210 5 _____

K. MAINTAIN ENGINE EXHAUST SYSTEMS

3210 1. Repair engine exhaust system components
3210 2. Inspect, check, troubleshoot, service, and repair engine exhaust systems
3210 3. _____
3210 4. _____

L. INSPECT AND REPAIR TURBO-JET AND TURBO-PROP ENGINES

3210 1. Overhaul turbine engines
3210 2. Inspect and repair turbine engine installation
3210 3. Inspect, troubleshoot, and adjust turbine engine components
3210 4. _____
3210 5. _____

KANSAS OCCUPATIONAL PROFILE

AIRCRAFT MECHANICS SERIES - AIRCRAFT ELECTRICIAN 91/

Name _____ SS# ___/___/___

School _____ Instructor _____

ENROLLMENT DATE	COMPLETION DATE	HOURS COMPLETED
___/___/___	___/___/___	_____

I certify that the student received training in the areas indicated.

Student Signature _____ Date ___/___/___

Instructor Signature _____ Date ___/___/___

Administrator Signature _____ Date ___/___/___

RATING SCALE:

3 Skilled-Works independently
2 Limited Skill-Requires assistance to perform task
1 Skill Undeveloped-Received instruction but has not developed skill
0 No Exposure-No instruction or training in this area

DIRECTIONS: Evaluate the student by checking the appropriate number to indicate the degree of competency reached. Rate each task to reflect employability readiness.

A. PERFORM CLEANING AND CORROSION CONTROL OPERATIONS

3210 1. Identify cleaning materials
3210 2. Select cleaning materials
3210 3. Perform aircraft cleaning and corrosion control
3210 4. Identify and utilize appropriate equipment for cleaning and corrosion control
3210 5. Identify corrosion type
3210 6. _____
3210 7. _____

B. USE MAINTENANCE PUBLICATIONS AND MAINTAIN FORMS AND RECORDS

3210 1. Select and use FAA and manufacturer's specifications and related regulations
3210 2. Read and interpret technical data
3210 3. Write descriptions of aircraft condition and work performed
3210 4. Complete required maintenance forms, records, and inspection reports
3210 5. _____
3210 6. _____

C. PERFORM ASSEMBLY AND RIGGING

3210 1. Identify and select aircraft hardware and materials
3210 2. _____
3210 3. _____

D. MAINTAIN AIRCRAFT LANDING GEAR SYSTEMS

3210 1. Inspect and repair retractable landing gear systems and components
3210 2. Inspect and repair landing gear struts
3210 3. Inspect and repair brakes, wheels, tires, and steering
3210 4. Inspect and repair ski, float, and hull installations
3210 5. Inspect and repair helicopter skids
3210 6. _____
3210 7. _____

E. MAINTAIN HYDRAULIC AND PNEUMATIC POWER SYSTEMS

3210 1. Repair hydraulic and pneumatic power system components
3210 2. Identify and select hydraulic fluids and seals
3210 3. Inspect and repair hydraulic and pneumatic power systems
3210 4. Identify and utilize appropriate hydraulic and pneumatic equipment
3210 5. Inspect, check, troubleshoot, service, and repair ice and rain control systems
3210 6. _____
3210 7. _____

F. MAINTAIN CABIN ATMOSPHERE CONTROL SYSTEMS

3210 1. Repair heating, cooling, air conditioning, pressurization, and oxygen system components
3210 2. Inspect, service, and repair heating, air conditioning, and pressurization systems
3210 3. Inspect, check, troubleshoot, service, and repair oxygen systems
3210 4. _____
3210 5. _____

G. MAINTAIN AIRCRAFT AND ENGINE INSTRUMENTS AND AVIONICS SYSTEMS

3210 1. Install instruments
3210 2. Inspect and repair heading, speed, altitude, attitude, and position systems
3210 3. Inspect, check, and service auto-pilot and approach control systems
3210 4. Inspect and service electronic communication and navigation systems
3210 5. Inspect and repair antenna and electronic equipment installations
3210 6. Identify and utilize special electronic tools and equipment
3210 7. Troubleshoot, service, and repair fluid rate-of-flow indicating systems
3210 8. Inspect, check, service, and repair engine pressure, temperature, and RPM indicating systems
3210 9. _____
3210 10. _____

H. INSPECT AND REPAIR AIRCRAFT ELECTRICAL SYSTEMS

3210 1. Repair aircraft electrical system components
3210 2. Install and service electric indicators, protective devices, wiring, and controls
3210 3. Inspect and repair AC and DC current electrical systems

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3210 4 Identify and utilize appropriate electrical tools and equipment
3210 5 Inspect, check, and service speed and takeoff warning systems, electrical brake controls, and anti-skid systems
3210 6 Inspect, check, troubleshoot, service, and repair landing gear position indicating and warning systems
3210 7 Repair engine electrical system components
3210 8 Install engine electrical wiring, controls, switches, indicators, and protective devices
3210 9 Determine relationship of voltage, current, and resistance in electrical circuits
3210 10 Compute and measure capacitance and inductance
3210 11 Measure voltage, current, resistance, and continuity
3210 12 Read and interpret electrical circuit diagrams
3210 13 Inspect batteries
3210 14 Service batteries
3210 15 _____
3210 16 _____

I. **INSPECT AIRCRAFT AND ENGINE FIRE PROTECTION SYSTEMS**

3210 1 Inspect, check, and service smoke and carbon monoxide detection
3210 2 Inspect, check, service, troubleshoot, and repair aircraft fire detection and extinguishing systems
3210 3 Inspect, check, service, troubleshoot, and repair engine fire detection and extinguishing systems
3210 4 Perform special safety wiring
3210 5 _____
3210 6 _____

J. **MAINTAIN AIRCRAFT FUEL SYSTEMS**

3210 1 Check fuel dump systems
3210 2 Inspect fuel management transfer and defueling system
3210 3 Inspect, check, and repair pressure fuel systems
3210 4 Repair aircraft fuel system components
3210 5 Inspect and repair fluid quantity indicating system
3210 6 Troubleshoot, service, and repair fluid pressure and temperature warning systems
3210 7 Inspect, check, service, troubleshoot, and repair aircraft fuel systems
3210 8 Inspect, check, and service water injection systems
3210 9 Overhaul carburetor
3210 10 Repair engine fuel metering system components
3210 11 Inspect, troubleshoot, and repair reciprocating and turbine engine fuel metering systems
3210 12 Repair engine fuel system components
3210 13 Inspect, check, service, troubleshoot, and repair engine fuel systems
3210 14 Install rigid and flexible fluid lines and fittings
3210 15 Identify and utilize special fluid line tools
3210 16 Perform tube flaring
3210 17 Perform tube bending
3210 18 Fabricate flareless fitting tube assemblies
3210 19 Fabricate a double flare
3210 20 Fabricate a flexible hose assembly
3210 21 Defuel aircraft
3210 22 _____
3210 23 _____

K. **MAINTAIN IGNITION SYSTEMS**

3210 1 Overhaul magneto and ignition harness
3210 2 Repair engine ignition components
3210 3 Inspect, check, service, troubleshoot, and repair reciprocating and turbine engine ignition systems
3210 4 Service spark plugs
3210 5 _____
3210 6 _____

L. **MAINTAIN INDUCTION SYSTEMS**

3210 1 Inspect, check, troubleshoot, service, and repair turbo-charger system
3210 2 Inspect, check, service, and repair heat exchangers (inner-coolers) and superchargers
3210 3 Inspect, check, service, and repair carburetor air intake and induction systems
3210 4 _____
3210 5 _____

M. **MAINTAIN ENGINE COOLING SYSTEMS**

3210 1 Repair engine cooling system components
3210 2 Inspect, check, service, troubleshoot, and repair cooling systems
3210 3 _____
3210 4 _____

N. **MAINTAIN ENGINE EXHAUST SYSTEMS**

3210 1 Repair engine exhaust system components
3210 2 Inspect, check, troubleshoot, service, and repair engine exhaust systems
3210 3 _____
3210 4 _____

O. **MAINTAIN AIRCRAFT PROPELLERS/ROTORS**

3210 1 Inspect, check, service, and repair propeller synchronizing and ice control systems
3210 2 Identify and select propeller lubricants
3210 3 Track and balance propellers
3210 4 Repair propeller control system components
3210 5 Inspect and repair fixed-pitch, constant speed, and feathering propellers and systems
3210 6 Troubleshoot, remove, and install propellers
3210 7 Track and balance main rotors
3210 8 Track and adjust tail rotors
3210 9 Inspect, service, troubleshoot, and repair rotor systems
3210 10 _____
3210 11 _____

P. **INSPECT AND REPAIR TURBO-JET AND TURBO-PROP ENGINES**

3210 1 Overhaul turbine engine
3210 2 Inspect and repair turbine engine installation
3210 3 Inspect, troubleshoot, and adjust turbine engine components
3210 4 _____
3210 5 _____

KAN. .S OCCUPATIONAL PROFILE

SHEET METAL WORKER

Name _____ SS# ____/____/____

School _____ Instructor _____

RATING SCALE: 3 Skilled-Works independent
2 Limited Skill-Requires assistance to perform task
1 Skill Undeveloped-Received instruction but has not developed skill
0 No Exposure-No instruction or training in this area

DIRECTIONS: Evaluate the student by checking the appropriate number to indicate the degree of competency reached. Rate each task to reflect employability readiness.

ENROLLMENT DATE	COMPLETION DATE	HOURS COMPLETED
____/____/____	____/____/____	_____

I certify that the student received training in the areas indicated.

Student Signature _____ Date ____/____/____

Instructor Signature _____ Date ____/____/____

Administrator Signature _____ Date ____/____/____

	A.	**APPLY SAFETY PRACTICES**	
3210	1.	Comply with shop and equipment safety rules	
3210	2.	Apply basic emergency first aid techniques	
3210	3.	Complete accident report	
3210	4.	Inspect work area and equipment for safe working environment	
3210	5.	Report shop, environmental and equipment safety violations	
3210	6.	Demonstrate use of fire extinguishers	
3210	7.	Correct safety hazards	
3210	8.	Demonstrate cardiopulmonary resuscitation (CPR) techniques	
3210	9.	Participate in safety training program	
	B.	**PERFORM BENCHWORK OPERATIONS**	
3210	1.	Deburr parts	
3210	2.	Disassemble, fit and reassemble parts	
3210	3.	Plan assembly operations	
3210	4.	Work materials with hand tools	
3210	5.	Work materials with portable power tools	
3210	6.	Bend metal with box and pan brake	
3210	7.	Bend sheet metal with cornice brake	
3210	8.	Bend metal with power brake	
3210	9.	Cut metal with power shear	
3210	10.	Notch materials	
3210	11.	Roll cylindrical metal shapes	
3210	12.	Work materials with hydraulic iron worker	
	C.	**PERFORM PRECISION MEASUREMENT**	
3210	1.	Measure parts with semi-precision measuring tools	
3210	2.	Inspect parts with precision measuring tools	
3210	3.	Inspect parts with comparison measuring tools	
3210	4.	Inspect assemblies	
3210	5.	Inspect parts with metric measuring instruments	
	D.	**PERFORM LAYOUTS**	
3210	1.	Analyze specifications	
3210	2.	Compute layout dimensions	
3210	3.	Plan layout operations	
3210	4.	Calculate reference points	
3210	5.	Calculate angles from reference point	
3210	6.	Calculate arcs from reference point	
3210	7.	Calculate locations from reference point	
3210	8.	Verify workpiece specifications	
3210	9.	Lay out reference points	
3210	10.	Lay out angles, arcs and locations from reference point	
3210	11.	Label workpiece	
3210	12.	Perform semi-precision layouts	
3210	13.	Perform sheet metal layouts from blueprints	
3210	14.	Perform layouts from templates	
3210	15.	Transfer layouts from models	
3210	16.	Verify layouts	
3210	17.	Supervise layout operations	
	E.	**OPERATE DRILLING MACHINES**	
3210	1.	Select drills using drill chart	
3210	2.	Use and maintain coolant system for drilling	
3210	3.	Change drills and tool holders	
3210	4.	Calculate and set drilling speeds, feeds and depth of cut	
3210	5.	Center drill and drill holes to size	
3210	6.	Perform basic drilling machine maintenance	
3210	7.	Plan sequence of drilling operations	
3210	8.	Set up drill press	
	F.	**OPERATE BENCH GRINDERS**	
3210	1.	Change and dress bench grinding wheels	
3210	2.	Sharpen and recondition hand tools	
3210	3.	Rough grind materials	
3210	4.	Perform basic bench grinder maintenance	
	G.	**SELECT MATERIALS**	
3210	1.	Interpret color codes, numbering systems and classification systems of materials (ie. AISI, SAE)	
3210	2.	Select material for job	
3210	3.	Identify materials	
	H.	**PERFORM HOUSEKEEPING AND RECORDKEEPING ACTIVITIES**	
3210	1.	Dispose of scrap metal chips, shavings, trash and waste	
3210	2.	Clean and maintain work area and leave in safe condition	
3210	3.	Clean and store hand tools, cutters, fixtures, jigs and attachments	
3210	4.	Follow tool crib procedures	
3210	5.	Report problems to supervisor	
3210	6.	Complete time cards	
3210	7.	Complete job status reports	
3210	8.	Make equipment failure reports	
3210	9.	Determine basic maintenance procedures using manuals	
3210	10.	Participate in participative management program (Quality Circles)	
	I.	**PERFORM SUPERVISORY FUNCTIONS**	
3210	1.	Determine availability of machines, supplies and materials	

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3210	2	Requisition, schedule and distribute supplies and materials
3210	3	Select most productive machine tool and tooling for job
3210	4	Coordinate workers with work to be done
3210	5	Write work schedules
3210	6	Schedule and control shop flow of jobs
3210	7	Maintain files
3210	8	Maintain production records
3210	9	Maintain labor records
3210	10	Review job orders, process sheets and blueprint specifications
3210	11	Issue blueprints, job orders, process sheets and tooling
3210	12	Explain work requirements
3210	13	Write production and progress reports
3210	14	Write technical reports
3210	15	Inventory supplies and equipment
3210	16	Maintain charts, tables, graphs or status boards on work scheduled
3210	17	Check job/time cards
3210	18	Inspect shop equipment and arrange for maintenance and repair work
3210	19	Coordinate maintenance and repair of shop equipment
3210	20	Plan and implement technical training for employees
3210	21	Train employees to operate mechanical devices
3210	22	Evaluate employee progress and performance
3210	23	Follow up employee reports of problems or equipment failures

J. FASTEN AND/OR JOINING SHEET METAL

3210	1	Rivet sheet metal with tinners rivets
3210	2	Rivet sheet metal with pop rivets
3210	3	Fasten materials using sheet metal screws

K. FABRICATE SHEET METAL

3210	1	Construct single hem
3210	2	Construct double hem
3210	3	Construct single lap seam
3210	4	Construct double lap seam
3210	5	Construct standing seam (air duct connections)
3210	6	Construct Pittsburgh lock seam
3210	7	Construct grooved seam
3210	8	Construct drive clip (air duct connection)
3210	9	Construct S-cleat (air duct connection)
3210	10	Fabricate rectangular straight duct
3210	11	Fabricate rectangular radius throat and radius heel duct elbow
3210	12	Fabricate rectangular square throat and square heel duct elbow
3210	13	Fabricate rectangular duct ogee offset
3210	14	Fabricate rectangular duct transition
3210	15	Fabricate rectangular shoe tap
3210	16	Fabricate round straight duct
3210	17	Fabricate round duct elbow
3210	18	Fabricate round duct offset
3210	19	Fabricate round duct taper (transition)
3210	20	Fabricate single wall equipment casing/ housing
3210	21	Fabricate double wall equipment casing/ housing
3210	22	Fabricate companion angle
3210	23	Fabricate flanged duct section

L. FABRICATE ARCHITECTURAL/ ROOFING SHEET METAL

3210	1	Fabricate ogee gutter
3210	2	Fabricate flashing
3210	3	Fabricate roof coping
3210	4	Fabricate gravel stop fascia
3210	5	Fabricate metal siding panel
3210	6	Fabricate column cover
3210	7	Fabricate metal ceiling panel

M. FABRICATE SPECIALTY SHEET METAL

3210	1	Fabricate rectangular single blade damper in frame
3210	2	Fabricate rectangular multi-blade damper in frame
3210	3	Fabricate rectangular tube
3210	4	Fabricate round tube
3210	5	Fabricate belt guard
3210	6	Fabricate breeching
3210	7	Fabricate rectangular fiberglass duct
3210	8	Fabricate lagging for insulated breeching

N. FABRICATE FOOD AND BEVERAGE DISPENSING EQUIPMENT

3210	1	Fabricate sink
3210	2	Fabricate shelf
3210	3	Fabricate cabinet shell
3210	4	Fabricate cabinet drawer
3210	5	Fabricate cabinet sliding door
3210	6	Fabricate cabinet hinge door
3210	7	Assemble cabinet components
3210	8	Fabricate range hood

O. INSTALL SHEET METAL SYSTEMS

3210	1	Install rectangular duct system
3210	2	Install round duct system
3210	3	Install single wall equipment casing/housing
3210	4	Install double wall equipment casing/housing
3210	5	Install breeching
3210	6	Install belt guards
3210	7	Install ogee gutter
3210	8	Install flashing
3210	9	Install coping
3210	10	Install gravel stop fascia
3210	11	Install louver

P. PERFORM OXY-FUEL WELDING (OAW)

3210	1	Select oxy-fuel welding (OAW) gas and filler metal according to job
3210	2	Change cylinders and adjust oxy-fuel manifold
3210	3	Set up portable oxy-acetylene welding equipment
3210	4	Perform minor maintenance on oxy-acetylene welding equipment (OAW)
3210	5	Braze ferrous metals
3210	6	Braze non-ferrous metals
3210	7	Solder copper
3210	8	Solder stainless steel
3210	9	Solder materials

Q. PERFORM SHIELDED METAL ARC WELDING (SMAW)

3210	1	Select shielded metal arc welding (SMAW) equipment and electrodes according to job
3210	2	Set up shielded metal arc welding equipment
3210	3	Perform minor maintenance on shielded metal arc welding equipment
3210	4	Weld 3/16" mild steel in horizontal position (2F,2G)
3210	5	Weld 3/16" mild steel in horizontal position (2F, 2G)
3210	6	Weld 3/16" mild steel in vertical up/down positions (3F, 3G)
3210	7	Weld stainless steel with shielded metal arc welding equipment (SMAW)

R. PERFORM GAS METAL ARC WELDING (GMAW)

3210	1	Select gas metal arc welding (GMAW) equipment, filler metal and gases according to job
3210	2	Set up gas metal arc welding equipment
3210	3	Perform minor maintenance on gas metal arc welding equipment

U. PERFORMING SUPERVISORY FUNCTIONS

3 2 1 0	1.D	Determine availability of machines, supplies and materials
3 2 1 0	2.D	Requisition, schedule, and distribute supplies and materials
3 2 1 0	3.B	Select most productive machine tool and tooling for job
3 2 1 0	4.D	Coordinate workers with work to be done
3 2 1 0	5.D	Write work schedules
3 2 1 0	6.C	Schedule and control shop flow of jobs
3 2 1 0	7.C	Maintain files
3 2 1 0	8.C	Maintain production records
3 2 1 0	9.C	Maintain labor records
3 2 1 0	10.C	Review job orders, process sheets, and blueprint specifications
3 2 1 0	11.D	Issue blueprints, job orders, process sheets, and tooling
3 2 1 0	12.C	Explain work requirements
3 2 1 0	13.C	Write production and progress reports
3 2 1 0	14.D	Write technical reports
3 2 1 0	15.C	Inventory supplies and equipment
3 2 1 0	16.D	Maintain charts, tables, graphs, or status boards on work scheduled
3 2 1 0	17.B	Submit parts for first piece inspection
3 2 1 0	18.B	Conduct in process inspections
3 2 1 0	19.B	Monitor reports of discrepancy or rejects during production process
3 2 1 0	20.C	Follow up on end product quality control standards
3 2 1 0	21.D	Initiate engineering change notices and rejection reports
3 2 1 0	22.C	Write requests for deviation to specifications
3 2 1 0	23.D	Check job/time cards
3 2 1 0	24.C	Supervise machine use
3 2 1 0	25.C	Inspect shop equipment and arrange for maintenance and repair work
3 2 1 0	26.C	Coordinate maintenance and repair of shop equipment
3 2 1 0	27.D	Plan and implement technical training for employees
3 2 1 0	28.C	Train employees to operate mechanical devices
3 2 1 0	29.C	Evaluate employee progress and performance
3 2 1 0	30.C	Follow up employee reports of problems or equipment failures
3 2 1 0	31.D	Interview job applicants
3 2 1 0	32.D	Hire workers
3 2 1 0	33.C	Dismiss employees
3 2 1 0	34.D	Determine work to be done by outside firm
3 2 1 0	35.D	Write contract for work with outside firm
3 2 1 0	36.D	Conduct meetings
3 2 1 0	37.	_____
3 2 1 0	38.	_____

V. SETTING UP NUMERICAL CONTROL/ COMPUTER NUMERICAL CONTROL (NC/CNC) MACHINES

3 2 1 0	1.A	Read job orders and process sheets to determine tooling and setup information
3 2 1 0	2.A	Mount work holding device
3 2 1 0	3.A	Install cutting tools in holders
3 2 1 0	4.A	Mount holder and tool on spindle
3 2 1 0	5.A	Insert tools and holders in machine magazine
3 2 1 0	6.A	Load tools in tool drum
3 2 1 0	7.A	Load automatic tool changer
3 2 1 0	8.A	Load tools in turret
3 2 1 0	9.A	Operate drawbar
3 2 1 0	10.A	Dial cutter compensation
3 2 1 0	11.A	Mount workpiece
3 2 1 0	12.A	Position & secure stock in work holding device
3 2 1 0	13.B	Place control tape in reader of control console
3 2 1 0	14.B	Load program in computer
3 2 1 0	15.A	Index cutting tool to zero point
3 2 1 0	16.A	Set controls to operating position and start machine
3 2 1 0	17.A	Dry run machine with machine locked
3 2 1 0	18.A	Run machine in manual/jog mode to verify cutter path
3 2 1 0	19.A	Machine first piece to verify accuracy of setup
3 2 1 0	20.A	Machine first piece to verify accuracy of program
3 2 1 0	21.B	Change cutting tools
3 2 1 0	22.B	Change location of clamps and fixtures
3 2 1 0	23.B	Reposition stock on fixture
3 2 1 0	24.A	Observe machine operation
3 2 1 0	25.A	Verify accuracy of machined workpiece
3 2 1 0	26.B	Adjust speeds and feeds for maximum output
3 2 1 0	27.B	Identify programming errors
3 2 1 0	28.C	Update programs stored in bubble memory
3 2 1 0	29.B	Notify supervisor of program errors
3 2 1 0	30.A	Identify machine malfunctions
3 2 1 0	31.C	Correct minor machine malfunctions
3 2 1 0	32.A	Notify supervisor of machine malfunctions
3 2 1 0	33.A	Verify workpiece detail identification number
3 2 1 0	34.A	Verify type of material of workpiece
3 2 1 0	35.A	Notify supervisor of discrepancies in parts
3 2 1 0	36.A	Complete machine tool safety setup
3 2 1 0	37.A	Establish tolerance requirement
3 2 1 0	38.A	Inspect first piece to verify setup
3 2 1 0	39.	_____
3 2 1 0	40.	_____

W. OPERATING NUMERICAL CONTROL/ COMPUTER NUMERICAL CONTROL (NC/CNC) MACHINES

3 2 1 0	1.A	Turn on/off power
3 2 1 0	2.A	Call up program in distributed numerical control
3 2 1 0	3.A	Place tape in reader
3 2 1 0	4.A	Key in program on machine
3 2 1 0	5.A	Align holding device with machine axis
3 2 1 0	6.A	Clamp dial indicator to tool holder
3 2 1 0	7.A	Change tool holder
3 2 1 0	8.A	Change or replace cutting tool
3 2 1 0	9.A	Adjust tool offset manually
3 2 1 0	10.A	Interpret operator related messages on screen
3 2 1 0	11.A	Control spindle speed override
3 2 1 0	12.A	Control feedrate override
3 2 1 0	13.A	Activate automatic cycle mode
3 2 1 0	14.B	Interrupt automatic cycle mode manually
3 2 1 0	15.B	Set manual mode control
3 2 1 0	16.B	Select cycle modifiers
3 2 1 0	17.B	Select manual feed/jog mode
3 2 1 0	18.A	Adjust cutter compensation
3 2 1 0	19.C	Edit program
3 2 1 0	20.B	Run segment of program
3 2 1 0	21.A	Perform sequence search
3 2 1 0	22.B	Interpret status lights
3 2 1 0	23.B	Change spindle speed
3 2 1 0	24.B	Initiate program restart from zero
3 2 1 0	25.C	Interrupt cycle
3 2 1 0	26.C	Check cutting fluids
3 2 1 0	27.B	Check surface finish
3 2 1 0	28.B	Check cut dimension
3 2 1 0	29.B	Index turret
3 2 1 0	30.B	Differentiate between machine controls
3 2 1 0	31.B	Set cycle dwell
3 2 1 0	32.C	Modify manual data input program
3 2 1 0	33.C	Adjust depth of cut
3 2 1 0	34.B	Reset tool cycle time
3 2 1 0	35.A	Execute emergency stop
3 2 1 0	36.A	Perform milling operations on NC/CNC machine
3 2 1 0	37.A	Perform drilling operations on NC/CNC machine
3 2 1 0	38.A	Perform boring operations on NC/CNC machine
3 2 1 0	39.A	Perform reaming operations on NC/CNC machine
3 2 1 0	40.C	Perform broaching operations on NC/CNC machine
3 2 1 0	41.A	Perform turning operations on NC/CNC machine
3 2 1 0	42.C	Perform forming operations on NC/CNC machine
3 2 1 0	43.D	Perform punching operations on NC/CNC machine
3 2 1 0	44.D	Perform welding operations with NC/CNC machine
3 2 1 0	45.C	Perform painting operations with NC/CNC machine
3 2 1 0	46.C	Perform assembly operations with NC/CNC machine
3 2 1 0	47.	_____
3 2 1 0	48.	_____

A MUST KNOW PRIOR TO MAKING APPLICATION FOR JOB
B NICE TO KNOW, SHOULD OR MUST LEARN IN FIRST 30 DAYS
C NOT REQUIRED FOR EMPLOYMENT BUT WOULD HELP ADVANCEMENT
D NOT REQUIRED AT THIS TRAINING LEVEL

P MACHINE PRO
RW

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3210	4	Weld 3/16" mild steel in flat position (1F, 1G)
3210	5	Weld 3/16" mild steel in horizontal position (2F, 2G)
3210	6	Weld 3/16" mild steel in vertical up/down positions (3F, 3G)
3210	7	Weld 16 gauge stainless steel in flat position (1F, 1G)
3210	8	Weld 16 gauge stainless steel in horizontal position (2F, 2G)
3210	9	Weld 16 gauge stainless steel in vertical up/down positions (3F, 3G)
3210	10	Weld 1/4" aluminum in flat position (1F, 1G)
3210	11	Weld 1/4" aluminum in horizontal position (2F, 2G)
	S.	**PERFORM GAS TUNGSTEN ARC WELDING (GTAW)**
3210	1	Select gas tungsten arc welding (GTAW) equipment, electrodes, gases and filler metal according to job
3210	2	Set up gas tungsten arc welding equipment
3210	3	Perform minor maintenance on gas tungsten arc welding equipment
3210	4	Weld 1/8" mild steel in flat position (1F, 1G)
3210	5	Weld 1/8" mild steel in horizontal position (2F, 2G)
3210	6	Weld 1/8" mild steel in vertical up/down positions (3F, 3G)
3210	7	Weld 16 gauge stainless steel in flat position (1F, 1G)
3210	8	Weld 16 gauge stainless steel in horizontal position (2F, 2G)
3210	9	Weld 11 gauge aluminum in flat position (1F, 1G)
3210	10	Weld 11 gauge aluminum in horizontal position (2F, 2G)
3210	11	Weld 11 gauge aluminum in vertical up/down positions (3F, 3G)
	T.	**PERFORM RESISTANCE WELDING**
3210	1	Select resistance welding equipment according to job
3210	2	Set up resistance welding equipment
3210	3	Perform minor maintenance on resistance welding equipment
3210	4	Weld materials by spot welding

KANSAS OCCUPATIONAL PROFILE

MACHINE SHOP

Name _____ SS# ___/__/___

School _____ Instructor _____

RATING SCALE:
3 Skilled-Works independently
2 Limited Skill-Requires assistance to perform task
1 Skill Undeveloped-Received instruction but has not developed skill
0 No Exposure-No instruction or training in this area

DIRECTIONS: Evaluate the student by checking the appropriate number to indicate the degree of competency reached. Rate each task to reflect employability readiness.

ENROLLMENT DATE	COMPLETION DATE	HOURS COMPLETED
___/___/___	___/___/___	

I certify that the student received training in the areas indicated.

Student Signature _____ Date ___/___/___

Instructor Signature _____ Date ___/___/___

Administrator Signature _____ Date ___/___/___

A. APPLYING SAFETY PRACTICES

3 2 1 0	1.A	Comply with shop and equipment safety rules
3 2 1 0	2.B	Apply basic emergency first aid techniques
3 2 1 0	3.C	Complete accident report
3 2 1 0	4.B	Inspect work area and equipment for safe working environment
3 2 1 0	5.B	Report shop, environmental, and equipment safety violations
3 2 1 0	6.B	Demonstrate use of fire extinguishers
3 2 1 0	7.D	Participate in disaster control exercises
3 2 1 0	8.D	Participate in shop safety committee
3 2 1 0	9.B	Correct safety hazards
3 2 1 0	10.D	Demonstrate cardiopulmonary resuscitation (CPR) techniques
3 2 1 0	11.B	Comply with safety requirements for working around automated systems
3 2 1 0	12.C	Participate in safety training program
3 2 1 0	13.D	Conduct safety training program
3 2 1 0	14.	_____
3 2 1 0	15.	_____

B. PERFORMING BENCHWORK OPERATIONS

3 2 1 0	1.B	Cut threads with taps and dies
3 2 1 0	2.C	Remove threaded fasteners and repair threads
3 2 1 0	3.A	Deburr parts
3 2 1 0	4.B	Polish parts using coated abrasives
3 2 1 0	5.C	Sharpen and polish tools using abrasive stones
3 2 1 0	6.C	Finish parts with hand grinders
3 2 1 0	7.C	Determine high spots using pigment
3 2 1 0	8.C	Remove high spots
3 2 1 0	9.C	Polish and buff parts with portable hand tools
3 2 1 0	10.C	Lap and fit parts
3 2 1 0	11.C	Disassemble, assemble, and straighten parts using arbor press
3 2 1 0	12.C	Cut keyway with broach
3 2 1 0	13.C	Set up and use hone to apply specified surface in hole
3 2 1 0	14.C	Disassemble, fit, and reassemble parts
3 2 1 0	15.A	Lift and position workpiece using hoists
3 2 1 0	16.B	Assemble jigs and fixtures
3 2 1 0	17.C	Repair jigs and fixtures
3 2 1 0	18.C	Plan assembly operations
3 2 1 0	19.D	Supervise assembly operations
3 2 1 0	20.C	Work materials with hand tools
3 2 1 0	21.C	Work materials with portable power tools
3 2 1 0	22.	_____
3 2 1 0	23.	_____

C. PERFORMING PRECISION MEASUREMENT

3 2 1 0	1.A	Measure parts with semi precision measuring tools
3 2 1 0	2.A	Inspect parts with precision measuring tools
3 2 1 0	3.A	Inspect parts with comparison measuring tools
3 2 1 0	4.B	Inspect parts using go/no go gages
3 2 1 0	5.A	Measure parts using dial calipers
3 2 1 0	6.A	Measure parts using vernier measuring tools
3 2 1 0	7.A	Measure parts using outside micrometers
3 2 1 0	8.A	Measure parts using inside micrometers
3 2 1 0	9.A	Measure parts using depth micrometers
3 2 1 0	10.A	Measure parts using special micrometers
3 2 1 0	11.A	Measure parts using telescoping gages
3 2 1 0	12.A	Measure parts using small hole gages
3 2 1 0	13.A	Measure parts using bore gages
3 2 1 0	14.B	Inspect parts using radius gages
3 2 1 0	15.A	Set up and inspect parts using dial indicators
3 2 1 0	16.C	Measure parts using optical comparators
3 2 1 0	17.C	Measure parts with height gage
3 2 1 0	18.B	Measure angles using sine bar
3 2 1 0	19.A	Measure angles, arcs, and locations from reference point
3 2 1 0	20.A	Measure threads
3 2 1 0	21.B	Measure tapers
3 2 1 0	22.C	Inspect keyways
3 2 1 0	23.C	Measure gears
3 2 1 0	24.C	Inspect surface finish of parts
3 2 1 0	25.C	Calibrate and use indicating micrometers
3 2 1 0	26.C	Calibrate precision measuring tools
3 2 1 0	27.C	Measure parts using mechanical measuring tools
3 2 1 0	28.C	Measure parts using electronic measuring tools
3 2 1 0	29.C	Measure parts using special measuring tools
3 2 1 0	30.A	Clean and store precision measuring tools
3 2 1 0	31.A	Perform first piece inspection
3 2 1 0	32.A	Inspect parts according to quality control and inspection standards and procedures
3 2 1 0	33.C	Monitor reports of discrepancy or rejects during production process
3 2 1 0	34.C	Conduct quality tests under differing environmental conditions
3 2 1 0	35.A	Verify dimensions
3 2 1 0	36.A	Verify alignments
3 2 1 0	37.A	Verify clearances
3 2 1 0	38.A	Inspect machined parts
3 2 1 0	39.C	Inspect assemblies
3 2 1 0	40.C	Inspect parts with metric measuring instruments
3 2 1 0	41.	_____
3 2 1 0	42.	_____

D. PERFORMING LAYOUTS

3 2 1 0	1.C	Analyze specifications
3 2 1 0	2.B	Compute layout dimensions
3 2 1 0	3.B	Plan layout operations
3 2 1 0	4.B	Calculate reference points
3 2 1 0	5.B	Calculate angles from reference point
3 2 1 0	6.B	Calculate arcs from reference point
3 2 1 0	7.B	Calculate locations from reference point
3 2 1 0	8.B	Verify workpiece specifications
3 2 1 0	9.A	Lay out reference points
3 2 1 0	10.A	Lay out angles, arcs, and locations from reference point
3 2 1 0	11.B	Label workpiece
3 2 1 0	12.C	Perform semi precision layouts

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3 2 1 0	13.B	Perform precision layouts from blueprints
3 2 1 0	14.C	Transfer layouts from models
3 2 1 0	15.C	Verify layouts
3 2 1 0	16.C	Supervise layout operations
3 2 1 0	17.	_____
3 2 1 0	18.	_____

	E.	**OPERATING SAWS**
3 2 1 0	1.B	Remove and replace saw blades
3 2 1 0	2.C	Cut and weld bandsaw blades
3 2 1 0	3.B	Calculate and set cutting speed and feed rate for sawing
3 2 1 0	4.A	Saw straight, curved, and irregular lines on vertical band saws
3 2 1 0	5.C	Saw material to layout with vertical band saw
3 2 1 0	6.C	Set up and use vertical band saw for interior contour sawing
3 2 1 0	7.C	Set up and use vertical band saw to file parts
3 2 1 0	8.C	Cut straight lines on vertical band saw using automatic feed
3 2 1 0	9.C	Cut angles on vertical band saw by tilting table
3 2 1 0	10.C	Set up and use jigs and fixtures for special sawing operations
3 2 1 0	11.A	Slot, groove, miter, and trim parts on saw
3 2 1 0	12.C	Set up and use stops and guides to control dimension of cuts
3 2 1 0	13.C	Set up and use automatic bar feed mechanism for production work
3 2 1 0	14.C	Set up and use horizontal band saw for production work
3 2 1 0	15.C	Set up and use power hack saw for production work
3 2 1 0	16.C	Set up and use circular saw for production work
3 2 1 0	17.C	Set up and use friction saw for production work
3 2 1 0	18.C	Set up and use rubber disk saw for production work
3 2 1 0	19.C	Use and maintain coolant system for sawing
3 2 1 0	20.C	Perform basic saw maintenance
3 2 1 0	21.C	Plan sequence of sawing operations
3 2 1 0	22.	_____
3 2 1 0	23.	_____

	F.	**OPERATING DRILLING MACHINES**
3 2 1 0	1.A	Select drills using drill chart
3 2 1 0	2.C	Use and maintain coolant system for drilling
3 2 1 0	3.A	Change drills and tool holders
3 2 1 0	4.B	Calculate and set drilling speeds, feeds and depth of cut
3 2 1 0	5.B	Align workpiece, jigs, and fixtures with drill spindle
3 2 1 0	6.A	Align tools with drill guide bushings
3 2 1 0	7.A	Center drill and drill holes to size
3 2 1 0	8.A	Countersink, counterbore, and spot face parts to specifications
3 2 1 0	9.A	Drill blind holes to specifications
3 2 1 0	10.A	Drill deep holes to specifications
3 2 1 0	11.C	Drill holes to specifications using special drills
3 2 1 0	12.C	Thread parts using tapping attachment
3 2 1 0	13.A	Ream holes to size
3 2 1 0	14.C	Burnish parts to specifications
3 2 1 0	15.C	Drill holes at angle by tilting head or table
3 2 1 0	16.C	Position spindle over hole location by swinging radial arm
3 2 1 0	17.B	Sharpen drills
3 2 1 0	18.C	Perform basic drilling machine maintenance
3 2 1 0	19.C	Plan sequence of drilling operations
3 2 1 0	20.A	Set up drill press
3 2 1 0	21.C	Set up radial drill to drill large workpieces
3 2 1 0	22.C	Set up precision drills
3 2 1 0	23.C	Set up special drilling machines
3 2 1 0	24.	_____
3 2 1 0	25.	_____

	G.	**OPERATING BENCH GRINDERS**
3 2 1 0	1.C	Change and dress bench grinding wheels
3 2 1 0	2.A	Sharpen and recondition hand tools
3 2 1 0	3.A	Grind lathe turning tools
3 2 1 0	4.A	Grind lathe form tools
3 2 1 0	5.A	Grind lathe threading tools
3 2 1 0	6.B	Grind lathe cut-off tools
3 2 1 0	7.C	Grind lathe boring tools
3 2 1 0	8.C	Sharpen carbide tools
3 2 1 0	9.A	Perform basic bench grinder maintenance
3 2 1 0	10.	_____
3 2 1 0	11.	_____

	H.	**OPERATING LATHES**
3 2 1 0	1.A	Calculate and set lathe speeds, feeds, and depth of cut
3 2 1 0	2.C	Use and maintain coolant system on lathe
3 2 1 0	3.A	Face and turn parts in 3-jaw chuck
3 2 1 0	4.A	Machine parts between centers
3 2 1 0	5.A	Indicate and machine parts in 4-jaw chuck
3 2 1 0	6.A	Machine parts using collet chucks
3 2 1 0	7.C	Machine parts using faceplate
3 2 1 0	8.C	Perform forming operations
3 2 1 0	9.C	Perform knurling operations
3 2 1 0	10.A	Center drill and drill parts
3 2 1 0	11.A	Bore, face, and recess internal diameters
3 2 1 0	12.A	Ream holes to specifications
3 2 1 0	13.C	Undercut diameters and shoulders
3 2 1 0	14.C	Machine eccentric diameters
3 2 1 0	15.D	Manufacture springs
3 2 1 0	16.B	Cut off parts
3 2 1 0	17.A	Align lathe centers
3 2 1 0	18.A	Calculate tapers
3 2 1 0	19.C	Turn tapers
3 2 1 0	20.C	Machine internal tapers
3 2 1 0	21.A	Thread external diameters
3 2 1 0	22.A	Thread internal diameters
3 2 1 0	23.C	Repair threads
3 2 1 0	24.C	Cut special thread forms
3 2 1 0	25.A	Hold dimensions using feed, precision, and indicator stops on lathe
3 2 1 0	26.C	Hold dimensions using digital readout on lathe
3 2 1 0	27.C	Machine parts using carbide tooling
3 2 1 0	28.C	Machine parts using ceramic tooling
3 2 1 0	29.C	Machine parts using steady rest
3 2 1 0	30.C	Machine long parts using follower rest
3 2 1 0	31.C	Machine parts using jigs and fixtures
3 2 1 0	32.C	Machine radii
3 2 1 0	33.C	Duplicate parts using tracing attachment
3 2 1 0	34.C	Grind parts using tool post grinder
3 2 1 0	35.C	Machine parts using quick change tooling system
3 2 1 0	36.B	Identify machining problems, determine the cause, and correct problems
3 2 1 0	37.C	Perform basic lathe maintenance
3 2 1 0	38.A	Plan sequence of lathe operations
3 2 1 0	39.A	Set up engine lathe
3 2 1 0	40.C	Set up high speed lathe for secondary operations
3 2 1 0	41.C	Set up bar turret lathe for production work
3 2 1 0	42.C	Set up chucking lathe for production work
3 2 1 0	43.	_____
3 2 1 0	44.	_____

	I.	**OPERATING VERTICAL MILLING MACHINES**
3 2 1 0	1.A	Calculate and set speeds, feeds, and depth of cut for vertical mill
3 2 1 0	2.A	Align the vertical milling machine head
3 2 1 0	3.A	Align workpiece, work holding devices, jigs, and fixtures on vertical mill
3 2 1 0	4.B	Use and maintain coolant system on milling machine
3 2 1 0	5.A	Change tool holders and cutters on vertical mill
3 2 1 0	6.A	Establish zero reference point on workpiece to be machined
3 2 1 0	7.A	Hold dimensions using table and precision stops on vertical mill
3 2 1 0	8.A	Hold dimensions using digital readout on vertical mill
3 2 1 0	9.A	Machine parts using end milling cutters on vertical mill
3 2 1 0	10.A	Machine parts using carbide milling cutters on vertical mill
3 2 1 0	11.D	Machine parts using ceramic milling cutters on vertical mill
3 2 1 0	12.A	Machine parts using conventional and climb milling on vertical mill
3 2 1 0	13.A	Machine parts square on vertical mill
3 2 1 0	14.B	Machine closed pockets on vertical mill
3 2 1 0	15.A	Machine angles on vertical mill
3 2 1 0	16.B	Machine radii using form milling cutter on vertical mill

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3 2 1 0	17.A	Machine keyways on vertical mill
3 2 1 0	18.C	Machine "T" slots on vertical mill
3 2 1 0	19.C	Machine dovetails on vertical mill
3 2 1 0	20.B	Center drill, drill, and ream holes on vertical mill
3 2 1 0	21.B	Tap holes on vertical mill
3 2 1 0	22.A	Bore, face, and recess diameters using boring head
3 2 1 0	23.A	Set up and use jigs and fixtures on vertical mill
3 2 1 0	24.A	Solve indexing problems
3 2 1 0	25.A	Mill multiple surfaces using indexing fixture on vertical mill
3 2 1 0	26.C	Mill multiple surfaces using dividing head on vertical mill
3 2 1 0	27.C	Mill radii using rotary table
3 2 1 0	28.B	Drill hole patterns using rotary table
3 2 1 0	29.C	Mill angles using rotary table
3 2 1 0	30.C	Duplicate contours using tracing attachment
3 2 1 0	31.B	Identify milling problems, determine causes, and correct problems
3 2 1 0	32.A	Perform basic vertical milling machine maintenance
3 2 1 0	33.A	Plan sequence of vertical milling operations
3 2 1 0	34.A	Set up vertical milling machine for manual operations
3 2 1 0	35.C	Set up vertical milling machine for automatic operations
3 2 1 0	36.	_____
3 2 1 0	37.	_____

J. OPERATING HORIZONTAL MILLING MACHINES

3 2 1 0	1.A	Calculate and set milling speeds, feeds, and depth of cut for horizontal mill
3 2 1 0	2.B	Align workpiece, work holding devices, jigs, and fixtures on horizontal mill
3 2 1 0	3.A	Change arbors and cutters on horizontal mill
3 2 1 0	4.A	Hold dimensions using table and precision stops on horizontal mill
3 2 1 0	5.A	Hold dimensions using digital readouts on horizontal mill
3 2 1 0	6.A	Machine parts using conventional and climb milling on horizontal mill
3 2 1 0	7.B	Machine parts using carbide insert cutters on horizontal mill
3 2 1 0	8.C	Machine parts using ceramic cutting tools on horizontal mill
3 2 1 0	9.C	Perform slab milling
3 2 1 0	10.C	Perform gang milling
3 2 1 0	11.C	Perform straddle milling
3 2 1 0	12.C	Mill parts square using horizontal mill
3 2 1 0	13.B	Mill angles on horizontal mill
3 2 1 0	14.B	Machine keyways on horizontal mill
3 2 1 0	15.C	Machine deep slots on horizontal mill
3 2 1 0	16.C	Cut off parts using horizontal mill
3 2 1 0	17.C	Perform gear calculations
3 2 1 0	18.C	Machine gears on horizontal mill using dividing head
3 2 1 0	19.C	Machine splines on horizontal mill using dividing head
3 2 1 0	20.C	Machine rack on horizontal mill
3 2 1 0	21.C	Machine multiple surfaces using indexing fixture on horizontal mill
3 2 1 0	22.C	Perform basic horizontal milling machine maintenance
3 2 1 0	23.C	Plan sequence of horizontal milling operations
3 2 1 0	24.C	Set up horizontal milling machine for manual operations
3 2 1 0	25.C	Set up horizontal milling machine for automatic operations
3 2 1 0	26.	_____
3 2 1 0	27.	_____

K. OPERATING BORING MACHINES

3 2 1 0	1.A	Calculate and set speeds, feeds and depth of cut on boring machine
3 2 1 0	2.A	Align workpiece, work holding devices, jigs, and fixtures on boring machine
3 2 1 0	3.C	Use and maintain coolant system on boring machine
3 2 1 0	4.B	Change cutters and tool holders on boring machine
3 2 1 0	5.A	Hold dimensions using table and precision stops on boring machine
3 2 1 0	6.A	Hold dimensions using digital readout on boring machine
3 2 1 0	7.B	Establish zero reference point on workpiece
3 2 1 0	8.C	Center drill, drill, and ream holes on boring machine
3 2 1 0	9.B	Countersink, counterbore, and spot face holes on boring machine
3 2 1 0	10.C	Tap holes on boring machine
3 2 1 0	11.C	Bore, face, and recess internal surfaces on boring machine
3 2 1 0	12.B	Machine external surfaces on boring machine
3 2 1 0	13.B	Identify boring machine problems, determine causes, and solve problems
3 2 1 0	14.C	Perform basic boring machine maintenance
3 2 1 0	15.C	Plan sequence of boring machine operations
3 2 1 0	16.C	Set up boring machine for manual operations
3 2 1 0	17.C	Set up boring machine for automatic operations
3 2 1 0	18.	_____
3 2 1 0	19.	_____

L. OPERATING SURFACE GRINDERS

3 2 1 0	1.A	Select grinding wheel using manufacturers' wheel data charts
3 2 1 0	2.A	Inspect, mount, and dress surface grinding wheels
3 2 1 0	3.A	Calculate and set surface grinding feeds and depth of cut
3 2 1 0	4.C	Maintain grinding coolant system
3 2 1 0	5.A	Grind parallel surfaces on surface grinder
3 2 1 0	6.A	Grind parts square on surface grinder
3 2 1 0	7.C	Grind vertical surface on surface grinder
3 2 1 0	8.C	Grind angles on surface grinder
3 2 1 0	9.C	Grind radii on surface grinder
3 2 1 0	10.C	Grind profiles on surface grinder
3 2 1 0	11.C	Remove warp using surface grinder
3 2 1 0	12.C	Cut off parts on surface grinder
3 2 1 0	13.B	Inspect ground parts
3 2 1 0	14.C	Perform basic surface grinder maintenance
3 2 1 0	15.A	Plan sequence of surface grinder operations
3 2 1 0	16.A	Set up surface grinder for manual operations
3 2 1 0	17.C	Set up surface grinder for automatic operations
3 2 1 0	18.	_____
3 2 1 0	19.	_____

M. OPERATING INSIDE DIAMETER (I.D.) GRINDERS

3 2 1 0	1.C	Inspect, mount, and dress I.D. grinding wheels
3 2 1 0	2.B	Calculate and set I.D. grinding speeds, feeds, and depth of cut
3 2 1 0	3.B	Parallel grind inside diameters
3 2 1 0	4.C	Grind to internal shoulder
3 2 1 0	5.C	Grind internal taper
3 2 1 0	6.C	Grind internal radius
3 2 1 0	7.C	Grind internal recess
3 2 1 0	8.C	Grind internal angle
3 2 1 0	9.C	Face grind internal shoulder
3 2 1 0	10.C	Grind blind hole
3 2 1 0	11.C	Grind through parts
3 2 1 0	12.A	Inspect inside diameters of ground parts
3 2 1 0	13.C	Perform basic I.D. grinder maintenance
3 2 1 0	14.C	Plan sequence of I.D. grinder operations
3 2 1 0	15.C	Set up I.D. grinder for manual operations
3 2 1 0	16.C	Set up I.D. grinder for automatic operations
3 2 1 0	17.	_____
3 2 1 0	18.	_____

N. OPERATING OUTSIDE DIAMETER (O.D.) GRINDERS

3 2 1 0	1.A	Inspect, mount, and dress O.D. grinding wheels
3 2 1 0	2.C	Calculate and set O.D. grinding speeds, feeds, and depth of cut
3 2 1 0	3.A	Align O.D. grinder head, table, and fixtures
3 2 1 0	4.B	Parallel grind outside diameters on O.D. grinder
3 2 1 0	5.A	Grind to external shoulder on O.D. grinder
3 2 1 0	6.C	Grind external taper on O.D. grinder
3 2 1 0	7.C	Grind external radius on O.D. grinder

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3 2 1 0	8.C	Grind external angle on O.D. grinder
3 2 1 0	9.C	Plunge grind external diameter on O.D. grinder
3 2 1 0	10.C	Grind parts between centers
3 2 1 0	11.C	Grind parts using collet chucks
3 2 1 0	12.C	Grind parts using other work holding devices
3 2 1 0	13.C	Grind parts using steady rest
3 2 1 0	14.C	Grind parts using follower rest
3 2 1 0	15.C	Grind complex profile on O.D. grinder
3 2 1 0	16.A	Inspect the outside diameters of parts ground on O.D. grinder
3 2 1 0	17.C	Perform basic O.D. grinder maintenance
3 2 1 0	18.C	Plan sequence of O.D. grinder operations
3 2 1 0	19.C	Set up O.D. grinder for manual operations
3 2 1 0	20.C	Set up O.D. grinder for automatic operations
3 2 1 0	21.	_____
3 2 1 0	22.	_____

O. OPERATING CENTERLESS GRINDERS

3 2 1 0	1.D	Inspect, mount, and balance centerless grinding wheels
3 2 1 0	2.D	Dress centerless grinding wheels and regulating wheels
3 2 1 0	3.D	Calculate and set centerless grinding speeds, feeds, and depth of cut
3 2 1 0	4.D	Parallel grind outside diameters on centerless grinder
3 2 1 0	5.D	Grind to external shoulder on centerless grinder
3 2 1 0	6.D	Grind external taper on centerless grinder
3 2 1 0	7.D	Grind external radius on centerless grinder
3 2 1 0	8.D	Grind external angle on centerless grinder
3 2 1 0	9.D	Plunge grind external diameter on centerless grinder
3 2 1 0	10.D	Plunge grind complex profile on centerless grinder
3 2 1 0	11.D	Inspect outside diameters of parts ground on centerless grinder
3 2 1 0	12.D	Perform basic centerless grinder maintenance
3 2 1 0	13.D	Plan sequence of centerless grinder operations
3 2 1 0	14.D	Set up centerless grinder
3 2 1 0	15.	_____
3 2 1 0	16.	_____

P. OPERATING TOOL AND CUTTER GRINDERS

3 2 1 0	1.A	Select, inspect, mount, and dress wheels on tool and cutter grinder
3 2 1 0	2.A	Align workhead and work holding devices on tool and cutter grinder
3 2 1 0	3.A	Calculate and set speeds, feeds, and depth of cut on tool and cutter grinder
3 2 1 0	4.C	Grind plain milling cutters
3 2 1 0	5.C	Grind staggered tooth milling cutters
3 2 1 0	6.C	Grind form relieved milling cutters
3 2 1 0	7.C	Grind end mills
3 2 1 0	8.C	Grind helical milling cutters
3 2 1 0	9.C	Grind angular milling cutters
3 2 1 0	10.B	Sharpen drills
3 2 1 0	11.C	Grind step drills
3 2 1 0	12.C	Grind straight reamers
3 2 1 0	13.C	Grind tapered reamers
3 2 1 0	14.C	Grind taps
3 2 1 0	15.C	Grind set of thread chasers
3 2 1 0	16.C	Grind boring bars
3 2 1 0	17.C	Grind lathe turning tools
3 2 1 0	18.C	Grind lathe form tools
3 2 1 0	19.C	Grind complex profiles
3 2 1 0	20.C	Grind carbide tools and cutters
3 2 1 0	21.C	Inspect cutter clearance angles
3 2 1 0	22.C	Identify grinding problems, determine causes, and solve problems
3 2 1 0	23.C	Perform basic tool and cutter grinder maintenance
3 2 1 0	24.C	Plan sequence of tool and cutter grinder operations
3 2 1 0	25.C	Set up tool and cutter grinder for manual operations
3 2 1 0	26.C	Set up tool and cutter grinder for automatic operations
3 2 1 0	27.	_____
3 2 1 0	28.	_____

Q. OPERATING ELECTRICAL DISCHARGE MACHINES (EDM)

3 2 1 0	1.D	Machine EDM electrodes to job specifications
3 2 1 0	2.D	Mount EDM electrodes in holder
3 2 1 0	3.C	Position workpiece on table or fixture
3 2 1 0	4.B	Align work and check for clearance
3 2 1 0	5.D	Calculate and set feed rate and depth of cut
3 2 1 0	6.D	Select electrical discharge circuit
3 2 1 0	7.D	Select method for using dilective fluid
3 2 1 0	8.C	Perform internal rough and finish cuts
3 2 1 0	9.D	Perform external rough and finish cuts
3 2 1 0	10.D	Perform profile rough and finish cuts
3 2 1 0	11.D	Perform repair work
3 2 1 0	12.D	Inspect parts machined with EDM
3 2 1 0	13.D	Identify EDM problems, determine causes, and solve problems
3 2 1 0	14.D	Perform basic EDM maintenance
3 2 1 0	15.D	Plan sequence of EDM operations
3 2 1 0	16.D	Set up wire EDM
3 2 1 0	17.D	Set up EDM
3 2 1 0	18.D	Set up and operate portable EDM machine
3 2 1 0	19.	_____
3 2 1 0	20.	_____

R. SELECTING MATERIALS

3 2 1 0	1.A	Interpret color, codes, numbering systems, and classification systems of materials (ie. AISI, SAE)
3 2 1 0	2.A	Select material for job
3 2 1 0	3.C	Identify metals using spark test
3 2 1 0	4.C	Identify metals using variety of tests
3 2 1 0	5.B	Identify materials
3 2 1 0	6.	_____
3 2 1 0	7.	_____

S. PERFORMING HEAT TREATMENT OF METALS

3 2 1 0	1.B	Test hardness of metals
3 2 1 0	2.C	Perform non-destructive testing
3 2 1 0	3.C	Perform destructive testing
3 2 1 0	4.C	Harden metals to job specifications
3 2 1 0	5.C	Temper metals to job specifications
3 2 1 0	6.C	Anneal metals to job specifications
3 2 1 0	7.C	Normalize metals to job specifications
3 2 1 0	8.C	Case harden metals to job specifications
3 2 1 0	9.	_____
3 2 1 0	10.	_____

T. PERFORMING HOUSEKEEPING AND RECORDKEEPING ACTIVITIES

3 2 1 0	1.A	Dispose of scrap metal chips, shavings, trash, and waste
3 2 1 0	2.A	Clean and maintain work area and leave in safe condition
3 2 1 0	3.A	Clean and store hand tools, cutters, fixtures, jigs, and attachments
3 2 1 0	4.A	Store grinding wheels
3 2 1 0	5.A	Follow tool crib procedures
3 2 1 0	6.A	Inspect and remove, replace, or adjust machine guards
3 2 1 0	7.D	Scrape and paint machines
3 2 1 0	8.A	Report problems to supervisor
3 2 1 0	9.A	Complete time cards
3 2 1 0	10.A	Complete job status reports
3 2 1 0	11.A	Make equipment failure reports
3 2 1 0	12.A	Read job orders and process sheets to determine tooling and set up information
3 2 1 0	13.C	Determine basic maintenance procedures using manuals
3 2 1 0	14.A	Participate in participative management program (Quality Circles)
3 2 1 0	15.	_____
3 2 1 0	16.	_____

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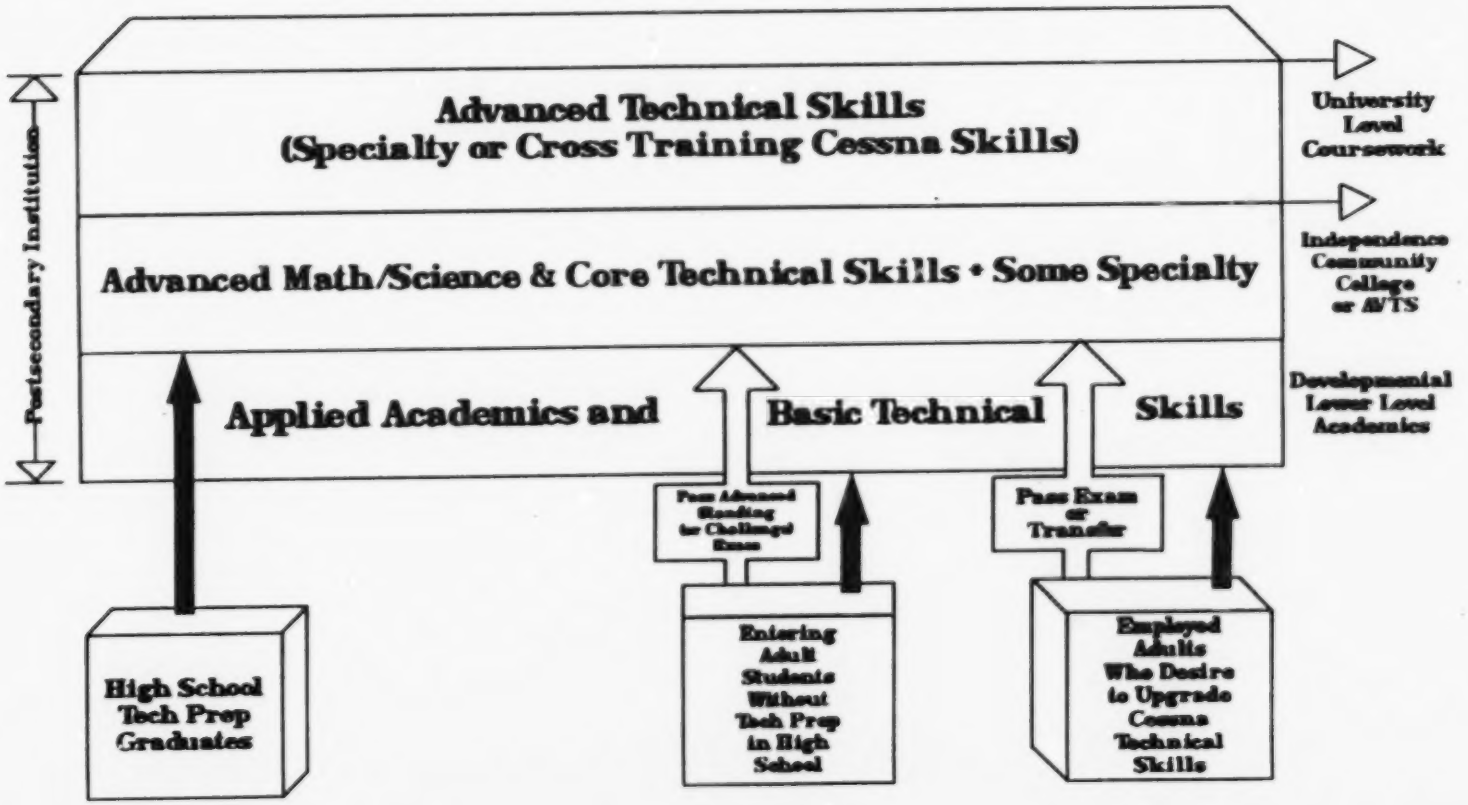
CESSNA

HOW DOES A "BRIDGE PROGRAM" FIT INTO A TECH PREP CURRICULUM?


Postsecondary Institution
Advanced Technical Skills
(Specialty or Cross Training Cessna Skills)
University Level Coursework
Advanced Math/Science & Core Technical Skills • Some Specialty
Independence Community College or AVTS
Applied Academics and
Basic Technical
Skills
Developmental Lower Level Academics
Pass Advanced Standing by Challenge Exam
Pass Exam or Transfer
High School Tech Prep Graduates
Entering Adult Students Without Tech Prep in High School
Employed Adults Who Desire to Upgrade Cessna Technical Skills

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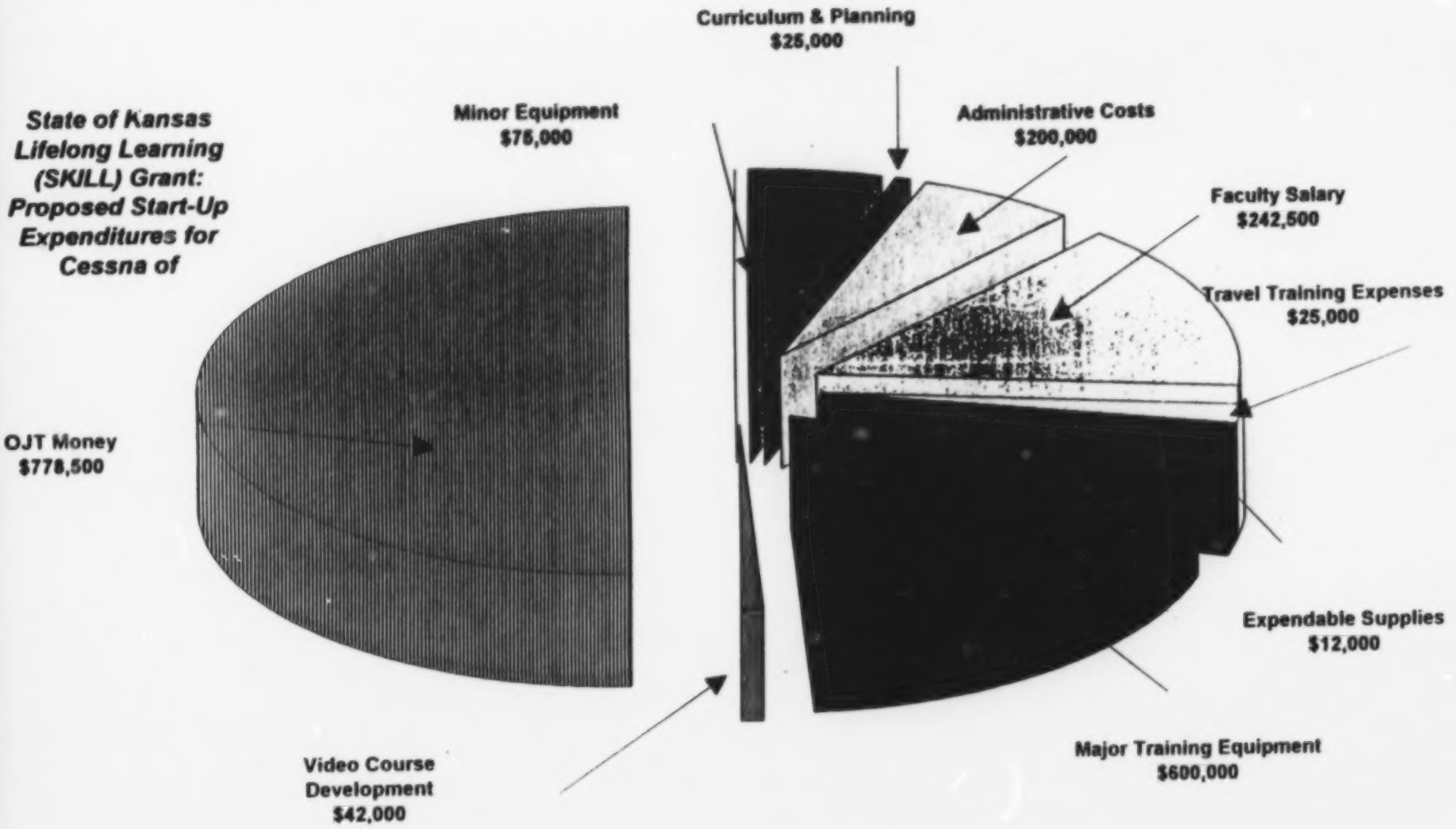

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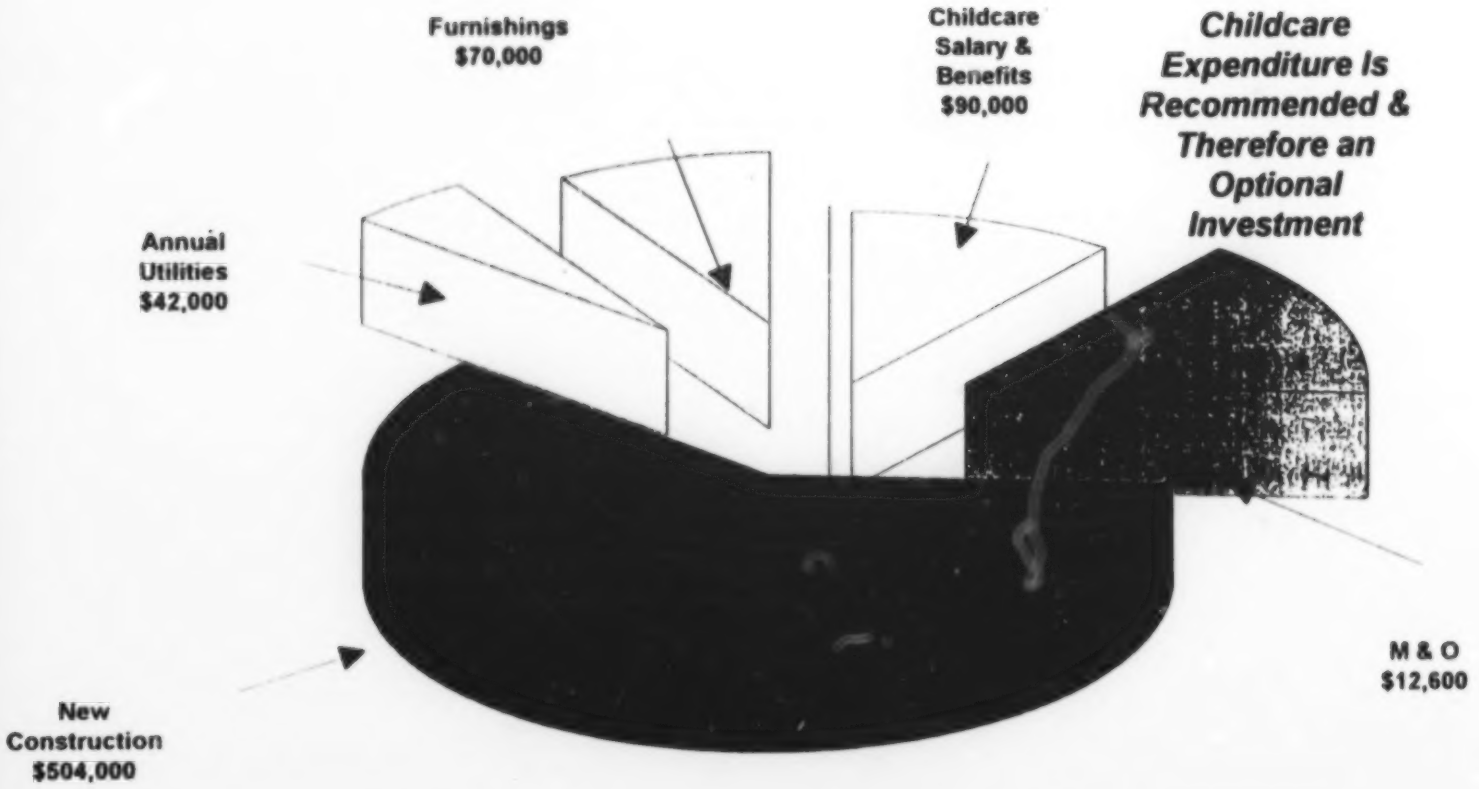
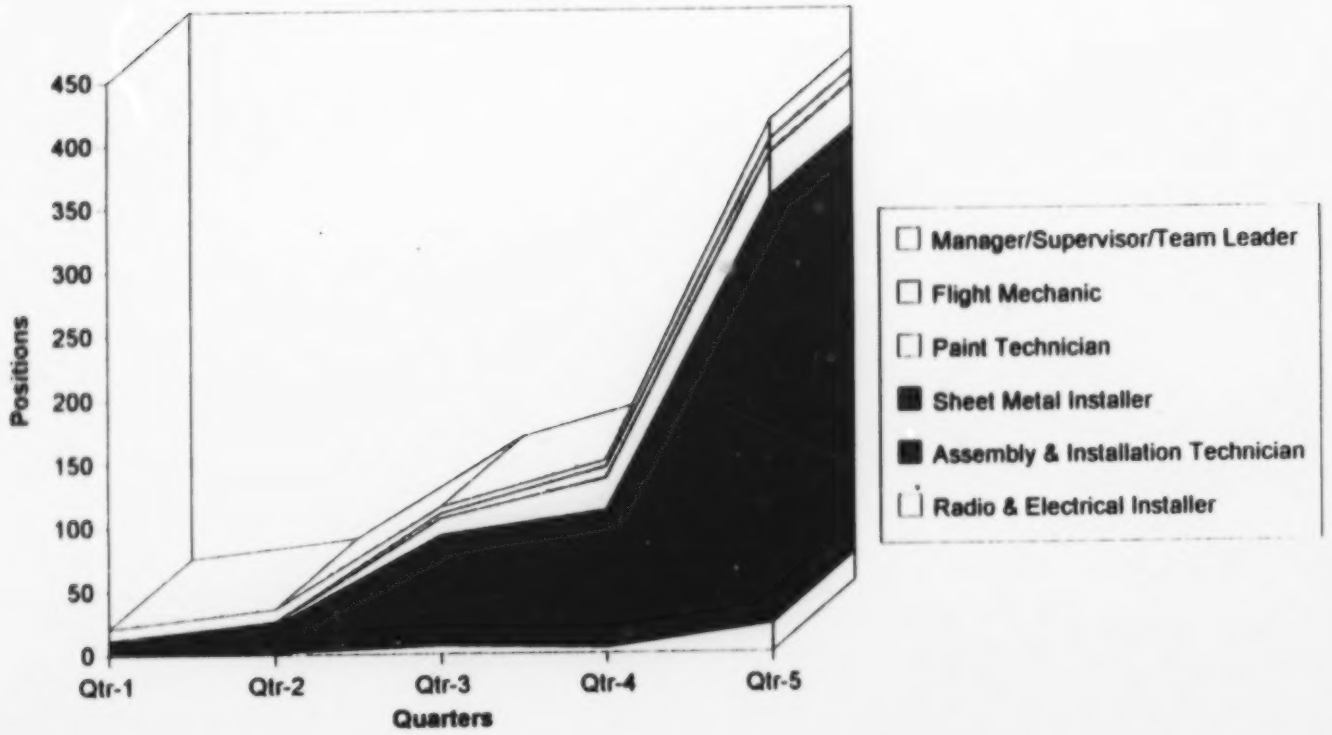


Estimated Start-Up & Operational Costs for New Training Facility



Staffing Requirements by Quarter